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Philodemus, of Gadara

PHILODEMUS: ON METHODS OF INFERENCE

A STUDY IN ANCIENT EMPIRICISM

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FOREWORD

Philodemus' treatise *On Methods of Inference* deserves a place in the history of philosophic thought not only for its contribution to our knowledge of Greek philosophy, but also for its unique position in the history of empiricism. Greek philosophy has been traditionally considered rationalistic and theoretical, rather than empirical and practical. It has appealed to those philosophers who hold that rationalistic speculation is the truly philosophic method. Yet the history of philosophy has shown that empirical investigation is indispensable for the formulation of theories, and that theories must be tested by a further recourse to observation. In ancient, as in modern times, many advances in philosophic thought have resulted from a new examination of empirical data and a temporary laying aside of conflicting dogmatic theories.

Most students of philosophy agree that the terms "empirical" and "rational" ordinarily characterize two different methods of philosophic inquiry, though they name procedures which need not be opposed nor completely distinct. It is generally conceded that the two methods supplement each other and that the two points of view must somehow be reconciled for any adequate handling of philosophic method. The history of philosophy reveals a continuous interaction between these two methods. In the Hellenistic period two schools of philosophy, the Epicureans and Sceptics, attempted to correlate the discoveries and methods of the empirical sciences with philosophic speculation in the fields of logic, epistemology, ethics, and metaphysics. This attempt takes its place beside certain other movements in the history of western thought which have shown similar tendencies, namely, the nominalism of the 14th century, the empirical philosophic

and scientific speculation of the 17th and 18th centuries, and modern scientific empiricism. Each of these empirical movements seems to arise as a reaction to great dogmatic systems, whenever the conflict of dogmatic theories necessitates a new inquiry into the nature of philosophic method, and into the relation of theories to empirical data.

The present study deals with the manner in which the problem of method was expressed by the empirically oriented philosophy of the Epicureans and Sceptics, and by their rationalistic opponents, the Stoics. Each of these schools developed a theory of signs, as the basis of both epistemological and logical speculations. We can only point out, without elaboration, that the Epicurean and Sceptic speculation in theories of signs has a definite kinship with that found in Locke, Condillac, and Berkeley; and that the Stoic position anticipates the point of view found in the logical works of William of Ockham, Hobbes, and Leibniz.

Philodemus' treatise *On Methods of Inference* is a defense of Epicurean empirical method, and at the same time an attack on the rival Stoic rationalistic method. It is by far the most complete discussion of Epicurean method that has been preserved, and as such it holds an important place in the history of empiricism. In spite of its fragmentary condition, it contains a remarkably complete expression of a thoroughgoing empirical methodology.

Philodemus does not show in detail how the Epicureans applied their method to the whole of their philosophy, yet his incidental references to fields other than logic are sufficient to show that the Epicureans attempted to develop their entire system in conformity with their methodology. An examination of Philodemus' other works as well as the writings of other Epicureans reveals the pervasive influence of the empirical principles set forth in this treatise. We have from time to time made references to some of the passages in other Epicurean works which corroborate Philodemus' statements, but we have not attempted to make these references exhaus-

tive. Indeed, it will be immediately apparent to anyone pursuing this subject that evidences of empirical method occur on almost every page of Epicurean writings.

The analysis of method has an important bearing on the poem of Lucretius; for though this poem contains many reflections of Epicurean empiricism, yet the frequent use of non-empirical proofs clearly indicates that Lucretius did not fully appreciate the underlying principles of the Epicurean system. The comparison of Lucretius' method with that presented by Philodemus provides an important criterion of Lucretius' fidelity to his Epicurean sources.

The obscure and technical language of Philodemus' treatise has required a rather lengthy commentary. It may be felt that some of the interpretations of his words and some of the conjectural restorations of fragmentary passages are not convincing. Yet, we think, there can be little doubt of the main tendencies of his thought. The commentary and the supplementary essays are intended to present the Epicurean position and its connection with other closely related movements, especially Stoicism, Scepticism, and empirical science. As far as possible, the material is presented historically, and no attempt is made to give a critical evaluation of the philosophical issues involved.

The Epicurean position advanced by Philodemus, together with the critical additions of the Empirical Sceptics, requires a revision of the traditional account of the Greek view of knowledge. It implies that there was a recognition by empiricists of a middle ground for science between the absolutism of Plato and Aristotle, and the rampant individualism and scepticism of the Sophists and Pyrrhonists. Truth, on this *via media*, is neither necessary and absolute once and for all, nor is it wholly unattainable.

Though the rationalistic and deductive methodology which was stressed by the Stoic school was not exploited by Philodemus, yet in some passages he recognizes at least implicitly the possibility of a formal method, which is dependent in

origin and validity on the empirical facts of experience. Modern empiricists have attempted to show that an empirical theory of meaning by combining a methodological rationalism with an empirical realism can handle formal necessity, as stressed by the Stoics, as well as the inductive method upheld by the Epicureans. The Epicurean methodology did not develop an adequate empiricism; but though it lacks a critical analysis of terms, a precise formulation of the nature of empirical data, and a detailed theory as to the relation of formal and empirical methods, it has in its distinctive social and objective point of view a definite superiority over the subjective and psychological empiricisms which have followed it down to the present day. Had the Epicurean method had more influence on subsequent philosophy, the progress of empirical method in both philosophy and science might have been much accelerated.

The authors acknowledge gratefully their debt to the many friends who have helped in the preparation of this volume. First among these are Prof. Robert Philippson of Magdeburg, Germany, and Prof. Charles W. Morris of the University of Chicago. Among others who have given us helpful criticism are Profs. H. F. Fraenkel, L. Edelstein, N. W. DeWitt, H. M. Hubbell, and H. F. Cherniss. We wish also to express our appreciation of the assistance given us by the Committee on Publication of Monographs, especially its chairman, Prof. L. R. Taylor, and by Prof. G. D. Hadzsits, the editor of the monograph.

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CHAPTER I

The Life and Works of Philodemus

The popularity of Epicureanism at Rome in the first century before Christ is indicated by many works, including the great poem of Lucretius, the lost prose works of Amafinius, Rabirius, and Catius,[1] and the several discussions of Epicureanism contained in Cicero's philosophical writings. In view of this interest, it is not surprising to find that an Epicurean school at Naples, under the leadership of Philodemus and Siro, established itself as one of the main intellectual centers of Italy during the last years of the Roman republic.

The existence of this Epicurean school at Naples is attested by a reference in Cicero,[2] by a poem in the Vergilian Appendix,[3] and pre-eminently by the discovery of a large library of Epicurean literature at Herculaneum. This library contains about 1800 papyrus rolls, among which are included not only many works of Epicurus and his early associates, but in addition the writings of Philodemus and other later Epicureans. In some of his less formal writings Philodemus refers to his colleague Siro, his pupils, and the discussions held at Naples and Herculaneum.[4] A picture of the way in which the school was conducted may be gained from his work on educational methods.[5]

The dates of the school can only be approximated. There is no certain evidence for its existence after 40 B.C., though

[1] Cf. Cicero *Acad. Post.* I.5; *Tusc. Disp.* IV.6–7; *Ad Fam.* XV.16.1; 19.2.

[2] *De Fin.* II.119.

[3] *Catalepton* 5.

[4] Cf. A. Rostagni, *Virgilio Minore*, 176–177.

[5] *On Free Speech* (ed. A. Olivieri). Cf. N. W. DeWitt, "Epicurean Contubernium," *Trans. Am. Philol. Assoc.* LXVII (1936), 55–63; "Organization and Procedure in Epicurean Groups," *Class. Philol.* XXXI (1936), 205–211.

the fact that the Epicurean library at Herculaneum was preserved until the eruption of Mt. Vesuvius in A.D. 79 may indicate that the Epicurean group at Naples did not entirely disappear under the early Empire. The existence of the school in the 40's is attested by a reference in one of Philodemus' works to the tyranny of Antony in Rome—a statement that would best apply to the year 44 B.C.[6]—and a poem in the Vergilian Appendix containing a reference to the small estate and possibly the death of Siro. This poem has been dated about the year 42.[7] It is not likely that the school survived the accession of Augustus.

The date of the founding of the school is equally uncertain. Our only evidence comes from our meagre knowledge of the early life of Philodemus, who was probably the founder, as he was later the leader, of the school. Philodemus was born in Gadara in Syria; [8] but he was probably of Greek parentage, and he received a thoroughly Greek education. He studied Epicureanism at Athens under Zeno of Sidon and Demetrius the Laconian and subsequently went to Italy. He may have arrived in Italy about the year 80 B.C., for his *Rhetoric*, addressed to a Roman, Gaius, and therefore perhaps written in Italy, was composed before the death of Zeno (soon after 78 B.C.).[9] It is possible that Philodemus went to Italy even earlier, the only limitation being that he was still active as

[6] See H. Diels, "Philodemos Über die Götter" (*Abhandl. der K. Preuss. Akad. der Wiss.* [1916], No. 7), 99–100; R. Philippson, "Zur Epikureischen Götterlehre," *Hermes* LIII (1918), 381–384. Antony is also mentioned in Philodemus *On Music*, in a context which suggests his first meeting with Cleopatra, and may therefore belong to the year 41 B.C. See Philodemus *On Music* (ed. van Krevelen), 66, 69.

[7] *Catalepton* 8; cf. T. Birt, *Jugendverse und Heimatpoesie Vergils*, 86; T. Frank, *Vergil*, 48, 95.

[8] Strabo XVI.2.29 (C. 759). The most recent discussion of Philodemus' life and works may be found in Pauly-Wissowa-Kroll, *R.E. s.v.* "Philodemus," XIX.2444–2482 (Philippson).

[9] Philod. *Rhetoric* (ed. S. Sudhaus), Suppl., 44–45; cf. H. Hubbell, "The Rhetorica of Philodemus," *Trans. Conn. Acad. of Arts and Sciences* XXIII (1920), 259.

late as 44 B.C. He probably built up a school gradually by attracting students from the sons of wealthy Romans and joining to himself other Epicurean teachers. Siro, the only other teacher in the school that we can name, appears to have been less important than Philodemus. Yet he was known to Cicero, and he was later famous as the teacher of Vergil and other Augustans.[10]

Under Philodemus and Siro the school had an eventful history during its comparatively short existence. Situated on the bay of Naples, the recreation center of many wealthy Roman families, it had contacts with some of the most famous figures of the time. One of its earliest and most enduring contacts was with Lucius Calpurnius Piso Caesoninus, the father-in-law of Caesar. One of Philodemus' works on politics is addressed to Piso,[11] and in the Greek Anthology is preserved an epigram which Philodemus wrote inviting Piso to a dinner at the school and promising him good company, if not much food.[12] The friendship of Philodemus and Piso was defamed by Cicero in his bitter speech against Piso (delivered in 55 B.C.); for Cicero attempted to disgrace Piso by associating his name with Epicureanism.[13] Accordingly he represented Philodemus as a clever, but unprincipled, parasite who played up to the worse side of Piso's character. Cicero's portrayal, however, occurring in an invective against Piso, must be discounted in view of the evidence from more reliable sources. That Philodemus was, or wished to be, under the patronage of Piso, is certainly true and is only in keeping with the social position of philosophers and educators of that period; [14] that he was an unscrupulous parasite is inconsistent both with his work as a leader in the school at Naples and the genuine interest in philosophy shown in many of his writings. In his defense we

[10] Cf. W. Crönert, *Kolotes und Menedemos*, 125–127.

[11] *On the Good King According to Homer* (ed. Olivieri), p. 66.

[12] *Anth. Pal.* XI.44.

[13] Cic. *In Pisonem* 68–72.

[14] Cf. W. Allen, Jr. and P. De Lacy, "The Patrons of Philodemus," *Class. Philol.* XXXIV (1939), 59–65.

may further point to the respect with which he is elsewhere mentioned by Cicero and Asconius.[15] The defamation must therefore be discounted as mere rhetoric intended to arouse *invidia* against Piso by attributing to him the moral degradation that even then in common opinion was associated with the name of Epicureanism.

Through his friendship with Piso Philodemus may have known Caesar and his associates. There is no proof of a relation between Philodemus and Caesar, but it is possible that Philodemus accompanied Piso on a mission to Caesar in Gaul in 55, and perhaps the Epicurean tendencies in Pansa, Cassius, and other contemporary political figures, were derived from the school at Naples.[16] Philodemus' casual mention of Antony, which suggests his intimacy with political circles, might be taken to corroborate this conjecture.[17]

Somewhat more tangible is the evidence linking Philodemus and Siro to Cicero and Torquatus. In the second book of the *De Finibus*, whose dramatic date is 50 B.C., the two Epicureans are mentioned as *familiares* of the two Romans.[18] This passage suggests, furthermore, that Cicero and Torquatus would not hesitate to consult Philodemus and Siro on any difficult points in Epicurean doctrine. A further connection between Cicero and the school at Naples may be seen in the fact that part of the Epicurean exposition in Cicero's *De Natura Deorum* is almost exactly parallel to a passage in Philodemus' *On Piety*. Either both used a common source, or, as is more likely, Cicero took his passage from Philodemus.[19] There are in addition other passages in Cicero's works which do not

[15] Cic. *De Fin.* II.119; Asconius *Scholia ad In Pisonem* (ed. Stangl), p. 20.

[16] The Roman Epicureans of the period included such figures as Atticus, L. Papirius Paetus, Vibius Pansa, Cassius Longinus, Trebatius; see Cic. *Ad Fam.* VII.12.1; IX.25.2; XV.19.1–3; Plutarch *Caesar* 66, *Brutus* 37, 39. Cf. *R.E.* "Philodemus," 2447; T. Frank, *Vergil*, 51.

[17] *Meth. of Inf.* Col. II.17.

[18] *De Fin.* II.119; cf. *Ad Fam.* VI.11.2.

[19] Cf. R. Philippson, "Die Quelle der Epikureischen Götterlehre in Ciceros erstem Buche *De Natura Deorum*," *Symbolae Osloenses* XIX (1939), 15–40.

mention Philodemus by name but could easily refer to him and his school.[20] Likewise a passage from Philodemus mentioning a governor of Cilicia has been taken to refer to Cicero.[21] Unfortunately there is no known evidence of any relation between Philodemus and Cicero's friend Atticus.

The Gaius to whom Philodemus dedicated his *Rhetoric* was probably a member of a prominent Roman family; and he must have been a pupil or patron of Philodemus.[22] Gaius Memmius may be the person concerned; for from Cicero we know that Memmius was connected with the Epicureans in his youth,[23] and it was to him that Lucretius dedicated the *De Rerum Natura*. Another possibility is Gaius Calpurnius Piso Frugi, a relative of Lucius Piso, Philodemus' later patron.[24] Attempts have been made to show that Lucretius belonged to Philodemus' school;[25] but as yet no conclusive evidence has appeared. The school at Naples, to judge from the extant remains, was not much interested in physics, and it was definitely opposed to philosophic poetry. Lucretius' poem, on the other hand, dealing primarily with physics, is based on Epicurus' own works and shows no indisputable trace of later Epicureanism. It is therefore unsafe to assume any specific connection between Philodemus and Lucretius.

Besides being a philosopher, Philodemus was a writer of occasional poems and epigrams; and as a poet he exerted his influence in yet another phase of Roman life. One of his epigrams was imitated by Catullus,[26] who also had dealings with the circles of Memmius and Piso. There may even have been some personal contact between Philodemus and

[20] E.g. *De Fin.* I.31, 65. Cf. also A. Rostagni, "Risonanze dell' Estetica di Filodemo in Cicerone," *Atene e Roma* III (1922), 28–44.

[21] Cf. Diels, *op. cit.*, 99.

[22] *Rhetoric* I.222–223.

[23] *Ad Fam.* XIII.1.2.

[24] Cf. Philippson, *R.E.*, "Philodemus," 2445.

[25] E.g. Guido della Valle, "L'Amore in Pompeii e nel Poema di Lucrezio," *Atene e Roma* XXXIX (1937), 139–175.

[26] Catullus 13 imitates *Anth. Pal.* XI.44; cf. T. Frank, *Catullus and Horace*, 29, 83–84.

Catullus. Much more important, however, is the influence of Philodemus and Siro on Vergil, who studied at the school of Naples in his youth.[27] The Vergilian Appendix shows pronounced Epicurean tendencies, and even mentions Siro by name.[28] The period of Vergil's membership in the school fell between 50 and 42 B.C.

Among other students of Philodemus and Siro who later belonged to Augustan literary circles were L. Varius Rufus and Quintilius Varus, both closely associated with Vergil.[29] It is also possible that Horace studied at Naples; for one of the papyrus fragments from Herculaneum contains a name that may be restored to read Horatius.[30] Yet the fragment more probably refers to Plotius Tucca, another of Vergil's companions.[31] An attempt has been made to show that Horace's *Ars Poetica* was derived from Philodemus' discussions of literary criticism.[32] This hypothesis is not very attractive, however, since the views of Horace on literary criticism are just the reverse of Philodemus', and it would therefore be necessary to assume that Horace based his work on views that Philodemus could have presented only to refute. However that may be, it is certain that Horace came under the influence of Philodemus; for several of his poems imitate Philodemus, and once he even mentions Philodemus by name.[33]

Thus it is apparent, in spite of the uncertainty of much of

[27] See Probus' *Life of Vergil* and Servius on Vergil's *Aeneid* VI.264 and *Eclogue* VI.13.

[28] Cf. *Catalepton* 5,8; *Ciris* 1–8; *Culex* 58–97.

[29] See A. Körte, "Augusteer bei Philodem," *Rhein. Mus.* XLV (1890), 172–177; Crönert, *Kol.*, 127.

[30] Cf. A. Rostagni's edition of Horace *Ars Poetica*, xxvii–xxix.

[31] Cf. Probus' *Life of Vergil*; Frank, *Vergil*, 52, 140; N. W. DeWitt, *Virgil's Biographia Litteraria*, 36–46.

[32] Rostagni, *op. cit.*, xxxiv–xxxv, lxxxiii–xciv, cviii–cxii.

[33] Horace *Sat.* I.2.121; cf. R. Philippson, "Horaz's Verhältnis zur Philosophie," *Festschr. des Kaiser Wilhelms Gymn.*; G. L. Hendrickson, "An Epigram of Philodemus and Two Latin Congeners," *Am. Journ. Philol.* XXXIX (1918), 27–43; F. A. Wright, "Horace and Philodemus," *ibid.*, XLII (1921), 168–169; Frank, *Catullus and Horace*, 260.

our evidence, that the Epicurean school at Naples was an extremely important factor in Italy in the first century B.C. Philodemus and Siro were linked in one way or another with many of the leading figures of the period. Our next consideration is the literary and philosophical activity of Philodemus.

Besides the few short poems of Philodemus preserved in the *Palatine Anthology*,[34] we now know of a large number of prose works that have been preserved more or less fragmentarily in the Herculanean Papyri. Many of the papyri have not yet been satisfactorily deciphered and published; yet those that have been made available provide a basis sufficient for understanding the general character of Philodemus' work. One remarkable feature of his literary activity is the wide range of subjects that he treated. He wrote an extensive work on the history of philosophy which Diogenes Laertius used and of which we have fragments dealing with the Pre-Socratics, Academy, and Stoa.[35] Closely related to this work are his biographies of Epicurus, Philonides,[36] and Socrates. The most numerous of his works are diatribes in the field of practical ethics, including such titles as *On Wealth, On Household Management, On Anger, On Flattery, On Vices.* The work *On Anger* also involved a certain amount of psychology, as did the work *On Death.* In the field of religion Philodemus wrote *On Piety* and *On the Gods.* Politics is the main subject of his *On the Good King According to Homer* and his *On the Stoics.* In the field of aesthetics and literary criticism we may mention his works *On Poems*, *On Music*, and *On Rhetoric.* Finally, he wrote several logical works, the most important of which is the treatise *On Methods of Inference.*[37]

The philosophical works tend to be very polemical. In fact it was an established tradition among Epicureans to

[34] Collected and edited by G. Kaibel, Greifswald, 1885.

[35] Diog. Laer. x.3; cf. Crönert, *Kol.*, 75–81, 127–133.

[36] The ascription of this work to Philodemus has been questioned by Philippson.

[37] The more important editions of Philodemus' works are listed in the bibliography.

devote much of their time to the refutation of the philosophers of other schools; and we find as early as the third century before Christ that the Epicurean Colotes undertook to prove systematically that every philosopher was wrong except Epicurus.[38] This constant emphasis on refuting opponents sometimes gives to Epicurean works a rather unpleasant tone; yet it must be recognized that for the most part the Epicureans were very fair in their presentation of opposing points of view. Though they sometimes despised and ridiculed their opponents, they did not ignore opposition; and by their careful study and refutation of opposing views they were able to give a clearer and more precise expression to their own beliefs.

Philodemus' principal opponents were the Stoics and Peripatetics. In some cases it is not clear whether he read his opponents' works himself, or knew them only through earlier Epicurean sources.[39] In the work *On Methods of Inference*, for example, he gives the Stoic position as stated by Bromius, Demetrius the Laconian, and Zeno of Sidon—all of whom were Epicureans. It is probable that much of the significant material in Philodemus' works was taken from his teacher Zeno, and that Philodemus made compilations of Zeno's teachings for the use of his students in the school at Naples.[40] Yet Philodemus was not merely a slavish copyist; his first-hand knowledge of other systems of philosophy is attested by the presence of several Stoic volumes in the library at Herculaneum,[41] and all of his works reveal characteristic touches of his own. In any case, even if Philodemus is primarily only a transmitter, he has preserved for us a large amount of valuable material, in regard to both the Epicureans and their opponents.

Philodemus shared with other Epicureans a marked dis-

[38] See Plutarch *Adversus Coloten* 1 (1107 E).

[39] See J. L. Stocks, "Philodemus," in *New Chapters in the History of Greek Literature*, 22–23.

[40] See F. Bahnsch, *Des Epicureers Philodemus Schrift*, Περὶ Σημείων καὶ Σημειώσεων, 5; R. Philippson, *De Philodemi Libro qui est* Περὶ Σημείων, 7.

[41] E.g. Chrysippus' *Logic*; cf. W. Crönert, "Die Λογικὰ Ζητήματα des Chrysippos," *Hermes* XXXVI (1901), 548–579.

regard for literary style. In ancient times the Epicureans had a reputation for carelessness in their writing,[42] and modern editors of Philodemus have bitterly complained of this same fault.[43] Yet there is a certain justification for his plain and unadorned prose. He purposely avoided a rhetorical style because he believed that an elaboration of language obscures the thought; and he wished above all else to be clear and unambiguous.[44] When allowances have been made for the mechanical difficulties attendant on the deciphering and restoring of the papyrus fragments, his writings appear on the whole to express his thought in a clear and straightforward way, and often with slight touches of humor.[45]

[42] Cf. Cic. *De Fin.* I.14; *Tusc. Disp.* II.7–8; Dionysius of Halicarnassus *De Compositione Verborum* 24.188.

[43] Cf. C. Jensen, "Ariston von Keos bei Philodem," *Hermes* XLVI (1911), 395; Hubbell, "The Rhetorica of Philod.," 260; Philippson, *De Philodemi Libro*, 5–6.

[44] See below, 151–152.

[45] Philodemus' style is defended by Sudhaus, *Rhetoric*, Suppl., vi; cf. *R.E.*, "Philodemus," 2476.

CHAPTER II

Introduction to Philodemus *On Methods of Inference*

Philodemus' treatise *On Methods of Inference* is one of the better preserved Herculanean papyri. Thirty-nine columns of continuous text have been restored with remarkably few lacunae. In addition there are eight short fragments whose place in the work as a whole has not been determined. The original length of the treatise is unknown, since the extant portion begins abruptly and ends with an indication that there is more to follow. The preserved copy, No. 1065 of the Herculanean library, was probably written during the lifetime of Philodemus.

The Greek text was published by T. Gomperz in 1865,[1] and subsequently improved in many passages by R. Philippson.[2] It has been the subject of two German dissertations,[3] and it has received passing notice in a few works of a more general nature. On the whole, however, it has remained practically unknown, especially in America.

The exact Greek title of this treatise is a matter of considerable doubt. According to W. Scott, the title in the Oxford facsimile of the papyrus, made about 1810, reads:

Φ.ΛΟΔΗΜΟΥ ΠΕΡΙ || ΦΑ . . N . . . N I . . CH . . IⲰCEⲰN

John Hayter, who brought the facsimile to Oxford, read the title as *Περὶ Φαινομένων Σημειώσεων*, which he translated *Upon Apparent Indications*.[4] Scott restored it as *Περὶ Φαινομένων καὶ Σημειώσεων*, *On Appearances and Inferences from Signs*.[5] Gom-

[1] *Herkul. Stud.* I.

[2] *Rhein. Mus.* LXIV (1909), 1–38; LXV (1910), 313–316.

[3] F. Bahnsch, *Des Epicureers Philodemus Schrift*, Περὶ Σημείων καὶ Σημειώσεων; R. Philippson, *De Philodemi Libro qui est* Περὶ Σημείων.

[4] See Gomperz, *Herkul. Stud.* I.XV.

[5] W. Scott, *Fragmenta Herculanensia*, 37.

perz, however, in his 1865 edition, used the title Περὶ Σημείων καὶ Σημειώσεων. He did not defend this reading, but probably he based it on the extensive discussion of signs (σημεῖα) in the text. Philippson, following the Oxford reading, has suggested Περὶ Φα[ντ]α[σιῶ]ν κ[αὶ] Ση[με]ιώσεων.[6] As a result of this disagreement it has become customary to use the convenient but admittedly incomplete title, Περὶ Σημειώσεων.

The subject matter of the main body of the preserved text is very fittingly entitled Περὶ Σημειώσεων, for it deals with the controversy between the Stoics and Epicureans regarding methods of inference by signs. The fragments, however, suggest that the work also contained other material. They include references to Epicurean empirical epistemology, a theory of perception, the methods of direct and indirect verification of propositions about unperceived objects, and the familiar division of things into present appearances, future objects, and naturally unperceived objects.[7] Thus they indicate that the treatise contained a general discussion of Epicurean "Canonic," prefatory to the more specialized discussion of inference. It is probable, therefore, that Philodemus wrote this work as an organon, including a theory of perception, an epistemological theory, and an elaboration of an empirical method. The restoration of Φαινομένων, "appearances," or Φαντασιῶν, "perceptions," to the title would serve to cover the more extended subject matter indicated by the fragments. However, inasmuch as the MS reading is uncertain, we have retained the accepted title Περὶ Σημειώσεων.

The date of composition can be determined only approximately, by a reference in the text to the pygmies which Antony had recently brought back from Syria, or Hyria.[8] The name of the place is uncertain, and may be read either way. Philippson, reading Syria, argues that the reference

[6] *Rhein. Mus.* LXIV (1909), 3.

[7] See below, 142–145.

[8] Col. II.15–18. There were several ancient towns named Hyria; see Pauly-Wissowa-Kroll, *R.E.*, *s.v.* "Hyria," IX.453.

here is to Antony's return from Syria to Rome in 54 B.C., after his journey to that province as *magister equitum* under Gabinius in 57. Philippson, therefore, would date this treatise in the year 54.[9] H. M. Last disagrees with Philippson, pointing out that Antony was not *magister*, but only *praefectus equitum* under Gabinius, and that he did not return to Rome in 54 B.C. He also claims that in 54 Antony would not have been sufficiently famous to justify the casual way in which Philodemus refers to him. Last maintains that if the reference is really to Antony's departure from Syria it must refer to his later visit to Syria in 42 B.C., and his return in 40. The date of this treatise, then, would be 40 or shortly thereafter, as Bahnsch had originally suggested.[10] Last raised a further point, moreover, in arguing that it is not likely that pygmies would come from Syria; they would much more probably come from Egypt. He suggests that the true reading of the passage may be not Syria, but Hyria, a town in southern Italy near Brundisium. In 40 B.C. Antony won a cavalry skirmish near this town, and he may have captured some pygmy *deliciae* at that time.[11] To Last's arguments Philippson replies that pygmies could very well come from Syria, since Suetonius mentions Syrian dwarfs possessed by Augustus. Philippson also points out that Antony, being one of Caesar's party, and hence politically allied with Piso, might very easily have been known to Piso's friend Philodemus as early as 54. He considers the reading Hyria very improbable. His conclusion is that there is no decisive argument against the earlier date.[12]

Since there is no conclusive evidence, it is impossible to fix the date of the work with any exactness. The two possible dates are 54 B.C. or 40 B.C., the two years in which Antony returned to Italy from Syria. The earlier date seems more

[9] *De Philodemi Libro*, 6.

[10] *Des Epicureers Philodemus Schrift*, 5 f.

[11] H. M. Last, "The Date of Philodemos De Signis," *Class. Quart.* XVI (1922), 177–180.

[12] *Philol. Woch.* XLIII (1923), 97–102.

probable, since it fits in with our other information about Philodemus' life. We are quite sure that Philodemus was writing in Italy between 70 and 44 B.C.; but in the absence of any references to him thereafter we hesitate to say that he was still active in 40.

Philodemus seems to have written the work *On Methods of Inference* as a source book. The extant portion contains at least four different discussions of empirical inference, the first from Zeno, the second from Bromius, the third and perhaps the fourth from Demetrius. These four discussions, of course, overlap; and where they treat the same subject they are not always consistent with one another. So far as we know, Philodemus nowhere tries to give the final word in the controversy; he merely reports to his readers the views of the leading Epicureans on the problem of empirical inference. The statements of the Stoic position are also taken from the same Epicurean sources.

The preserved section of the work *On Methods of Inference* defends the Epicurean system of empirical inference against the attacks of the Stoics. The Stoics hold that sign relations are *a priori* and rational, whereas the Epicurean view is that signs are based entirely on sense perception.[13] According to Philodemus, the only process of inference through signs which the Stoics accept as valid is the method of contraposition. The rational character of this method is revealed in the Stoic distinction between the common sign and the particular sign. The common sign exists whether the unperceived object which it signifies exists or not; hence it is not a reliable basis of inference. The particular sign, on the other hand, exists only when the unperceived object exists, in such a way that if the existence of the object signified is denied, the existence of the sign must be also. Thus particular signs, which provide the only reliable grounds for inference, are established through the purely formal test of contraposition.[14]

[13] This controversy is discussed in detail in Chapter VI.

[14] Col. I.1–19.

The Epicurean position, on the other hand, is that the relation between sign and thing signified is learned only from perception, through the method of induction or analogy. Unless a constant connection between objects has first been established by perception, the Stoic test of contraposition is not possible. According to the Epicurean method we infer the nature of unperceived objects by analogy with the objects in our own experience. The Epicureans agree with the Stoics in rejecting inference from common signs; yet they differ in saying that particular signs—i.e., signs that cannot exist if the unperceived objects which they signify do not exist—do not have a logically necessary connection with the objects that they signify. In place of logical necessity the Epicureans use inconceivability as a criterion of the particular sign. An inference from signs is valid if it is inconceivable that the sign exists when the thing signified does not. Inference based on inconceivability, according to the Epicureans, is as valid as inference based on contraposition. But inconceivability is an empirical criterion, based on past experience; hence inference from particular signs may be empirically derived.[15]

This brief statement indicates the basic difference between Stoics and Epicureans in respect to inference from signs. The rest of the treatise *On Methods of Inference* amplifies the positions of the two schools. Because of the repetitions in the work, it seems desirable here to give an outline of its subject matter. Of the four sections which compose the extant portion of the treatise, the first two consist of lists of Stoic arguments which attack empirical inference, along with the Epicurean answers to these arguments. Of the first section, which was taken from Zeno, the two opening Stoic arguments are lost, but the Epicurean answers to them, which have been preserved, show that they both dealt with the formal requirements of valid inference. In answering them Philodemus claims that the method of analogy fulfils these formal requirements (XI.29–XII.36).

[15] XI.32–XII.36; XIV.2–27; XXI.27–29; XXVIII.15–25; XXXII.31–XXXIII.9.

The third Stoic argument tried to refute analogy by adducing palpably invalid inferences, e.g., that since there are figs within our experience there must be figs beyond our experience (I[a]). In reply Philodemus points out that some discrimination must be used in the construction of analogical inferences (XII.36–XIV.2).

Next comes the argument from particular signs (mentioned above), after which Philodemus takes up the problem of unique cases. The Stoics argue that the method of analogy is made invalid by the existence of unique cases within our experience. These unique cases, they say, destroy the uniformity of experience; and since it is possible that objects beyond our experience may also be unique, we are not justified in supposing that what is true in our experience is true everywhere (I.19–II.25). To this argument the Epicureans reply that the unique cases mentioned by the Stoics do not destroy analogy, but rather support it. Differences are as important as similarities for inference, as long as the differences are uniform (XIV.28–XVI.4).

Philodemus next gives the Stoic argument that contraposition is the only method of inference that is formally valid (II.25–IV.37). The Epicureans contend in opposition that arguments by contraposition are valid only in so far as they are supported by analogy. All formal principles are empirically derived (XVI.4–XVII.28).

The Stoics claim that Epicurean physics is inconsistent with empirical method. The qualities that the Epicureans assign to atoms are not the same as the qualities of objects in our experience (IV.37–V.7). The Epicureans defend their atomism by an empirical distinction between primary and secondary qualities (XVII.28–XVIII.17).

The Stoics ask on what grounds some similarities are accepted and used in empirical inferences, while others are rejected (V.8–36). The Epicureans reply that inference must be made only between objects that are closely related and as similar as possible (XVIII.17–XIX.4).

Two Stoic arguments are presented but not answered in the first section. First, the Stoics raise the dilemma: Empirical inference cannot be established between identical objects, for if objects are identical there is nothing to infer; yet inference cannot be made between objects that are merely similar, for the difference present might be such as to destroy the inference (v.37–vi.36). Second, they argue that induction is incomplete. It is impossible to examine all appearances, and it is inadequate to examine only some (vi.36–vii.5).[16]

Philodemus next mentions and answers two sophistic arguments of the Stoic Dionysius: The Epicureans use the word "analogy" ambiguously; and unless the Epicureans can show that they conform to things in experience, we shall deny by contraposition that the Epicureans exist (vii.5–38).

Dionysius also maintains that it is impossible to be sure that there is no evidence to the contrary, since it is impossible to examine all possible cases (vii.38–viii.15). The Epicurean reply is that an inference is sufficiently verified if it is found valid in a large number of cases (viii.16–ix.8).

Finally, Dionysius points out that by analogical inference the sun should be considered very large; to which the Epicureans reply that the sun is unique and therefore not subject to analogy (ix.8–xi.8).

The second section, beginning with Col. xix.4, gives Bromius' enumeration and refutation of the Stoic arguments against analogy. Bromius was following the teachings of Zeno, and some of his arguments are very similar to previous ones in the first section.

First, the Stoics say that it is impossible to exhaust all appearances (xix.12–19); to which Bromius replies that it is sufficient to examine many homogeneous and varied appearances (xx.31–xxi.16).

Second, the Stoics point to the wide variations within our experience, and ask whether the unperceived objects may not

[16] The probable Epicurean answers to these two arguments may be surmised from xx.31–xxi.16 and xxii.2–28 of the second section.

vary still more, in which case empirical inference will be destroyed (xix.19–25). The Epicureans respond that there is always a limit to variations, and that this limit holds universally. By observing the limits of variation we come to know empirically the necessary and essential qualities of objects. At the same time we do not ignore the variation and relativity within our experience (xxi.16–xxii.2).

Third, the Stoics argue that neither identical objects nor the merely similar provide a basis for empirical inference (xix.25–36). If the sign and thing signified are identical, there is no occasion for inference; if only similar, the difference present may vitiate the inference. Bromius' reply is that under certain specified conditions inferences can be made from both identical and similar objects (xxii.2–28).

The fourth Stoic argument on Bromius' list is that all inference, in order to be formally valid, must be analytic (xix.36–xx.4). Bromius counters by asserting that empirical inferences do not presuppose their conclusions (xxii.28–xxiii.7).

The existence of peculiarities provides the fifth subject of controversy. The Stoics hold that the peculiarities of objects invalidate analogical inference (xx.4–10). Bromius claims that it is possible to find common qualities underlying individual differences; and these basic similarities provide a basis for inference (xxiii.7–xxiv.10).

To the Stoic argument from unique cases, mentioned in the sixth place (xx.10–11), Bromius again states that the differences among objects outside our experience must be analogous to the differences found within our experience (xxiv.10–xxv.23).

Very close to the preceding is the argument from variations, e.g., in digestion (xx.11–21). The relativity found in experience invalidates empirical inference. Bromius replies that there are certain constants in experience which provide a sound basis for inference (xxv.24–xxvii.9).

Finally, the Stoics argue that Epicurean metaphysics is not consistent with empirical inference, for it assumes that

unperceived objects, e.g., gods and atoms, are not like the perceived (xx.21–30). Bromius' answer is in xxvii.10–28. This concludes the section taken from Bromius.

In the short transitional paragraph that follows (xxvii.28–xxviii.14), Philodemus states that he will now set forth the fundamental and pervasive errors of the Stoic arguments against empirical inference. He gives two accounts of these fundamental errors. The first, taken from a work of Demetrius, forms the third section of the treatise. The errors are as follows:

1. The Stoics do not recognize inconceivability as a criterion of inference distinct from contraposition (xxviii.15–25).

2. They fail to recognize that not any chance similarity is used for inference (xxviii.25–29).

3. They do not recognize that even the variations and unique objects in experience are revealed by appearances, and support analogical inference (xxviii.29–37).

4. They do not recognize the empirical tests of inference (xxviii.37–xxix.4).

5. They do not recognize the possibility of establishing empirically the nature of things *as such* (xxix.4–15).

The second account of the basic Stoic errors is apparently taken from the oral discussions of some Epicurean teacher. His name has been lost, but Philippson suggests it may again be Demetrius. This second account is much more detailed than the first, and it forms the fourth and last section of Philodemus' treatise. The errors are these:

1. The arguments that the Stoics use to refute analogy are themselves analogical arguments, e.g., if there are variations within our experience, there are variations beyond our experience (xxix.24–xxx.15).

2. The Stoics ignore the empirical tests of inductive inference (xxx.15–33).

3. In rejecting analogy the Stoics make the unperceived unknowable, for there is no other method (xxx.33–xxxi.36).

4. Contraposition can be reduced to analogy, but not *vice versa* (xxxi.36–xxxii.8).

5. Although there are three kinds of signs, there is only one method of analogy (xxxii.8–13).

6. The Stoics ignore the social basis of analogical inference (xxxii.13–31).

7. They disregard the criterion of inconceivability, which is more basic than contraposition (xxxii.31–xxxiii.9).

8. They do not appreciate the empirical basis of cosmology (xxxiii.9–20).

9. They have not analyzed the four meanings of the terms "according as," "in so far as" (xxxiii.21–xxxvi.7).

10. They overlook the condition that there must be no evidence to the contrary, and they fail to discriminate antecedent from generic signs (xxxvi.7–24).

11. They use the term "sign" ambiguously (xxxvi.24–xxxvii.1).

12. They do not realize that there are two types of consequence, only one of which can be tested by contraposition (xxxvii.1–xxxviii.8).

13. They base their views on false opinions (xxxviii.8–22).

The work closes with a proposal to discuss medical empiricism (xxxviii.22–32).

The fragments of the *On Methods of Inference* are closely related to the subject matter of the longer text, but they are written from a more general point of view. They include problems of epistemology as well as logical inference. Hence we may suppose that they were part of a more general discussion of the Epicurean position.[17] Among the topics mentioned are the four empirical criteria of truth: perception, anticipation, mental perception, and feeling.[18] Mental perception is defended, and its use in reference to knowledge of the gods is indicated.[19] There are also general remarks on the possi-

[17] See above, 11.

[18] Frag. i.

[19] Frags. vi, viii.

bility of knowledge beyond immediate experience and on the various uses of signs.[20] Finally, the distinction is made between things temporally unperceived and things naturally unperceived.[21]

The first critical edition of the Greek text of this papyrus was made by Gomperz in 1865. Gomperz did not see the papyrus itself, but based his text on the Oxford and Naples copies. Philippson's restorations, also, are based on these copies, though Philippson received readings of a few passages in the papyrus through W. Crönert and D. Bassi. The present editors hope that some day they may have the opportunity of examining the papyrus, but at the present time such a project is hardly feasible. Through the courtesy of the Bodleian Library we have been able to secure photostats of the Oxford copy, which is by far the better of the two copies. These photostats reveal traces of many letters which were bracketed by Gomperz and Philippson. These letters have accordingly been removed from the brackets. In the critical notes are indicated all departures from the text of Gomperz, with the exception of those changes which merely involve the position of brackets.

Because of the excellent preservation of this papyrus the restorations are for the most part reasonably certain. There are a few passages, however, such as Col. I^a, that have been restored, not with any claim to complete accuracy, but merely as an indication of the probable course of the argument. Such passages may be easily recognized by the extent of the bracketed portions in the Greek text.

The signs used in the Greek text are as follows:

[α]	letters restored.
<α>	letters added.
[[α]]	letters deleted.
α̣	letters whose reading is uncertain.

[20] Frags. II, III.
[21] Frag. IV.

The abbreviations and references used in the critical notes are as follows:

O.: The Oxford copy of Herc. Pap. 1065.

G.: T. Gomperz, *Herkul. Stud.* I (Leipzig, Teubner, 1865), if not otherwise indicated.

G. *Zeitschr.*: T. Gomperz, "Die Herculanischen Rollen," *Zeitschrift f. d. Oesterreichischen Gymnasien* XVII (1866), 691–708.

G. *Mélanges Graux:* T. Gomperz in *Mélanges Graux, Recueil de Travaux d'Érudition Classique Dédié à la Memoir de Charles Graux* (Paris, Thorin, 1884), 51–52.

Ph.: R. Philippson.

Ph. *diss.*: R. Philippson, *De Philodemi Libro qui est* Περὶ Σημείων (Dissertation. Berlin, 1881).

Ph. *R.M.* LXIV: R. Philippson, "Zur Wiederherstellung von Philodems sog. Schrift Περὶ Σημείων καὶ Σημειώσεων," *Rhein. Mus.* LXIV (1909), 1–38.

Ph. *R.M.* LXV: R. Philippson, "Zu Philodem Περὶ Σημειώσεων," *Rhein. Mus.* LXV (1910), 313–316.

Ph. *ep.*: R. Philippson by letter.

D.: De Lacy.

Bahnsch: F. Bahnsch, *Des Epicureers Philodemus Schrift*, Περὶ Σημείων καὶ Σημειώσεων (Lyck, Wiebe, 1879).

Bücheler: F. Bücheler, "Antediluvianisches aus Philodemos," *Rhein. Mus.* XX (1865), 311–314.

Usener, *Epic.*: H. Usener, *Epicurea* (Leipzig, Teubner, 1887).

All words in the translation enclosed in parentheses are additions not found in the Greek text.

CHAPTER III

Text and Translation

ΦΙΛΟΔΗΜΟΥ
ΠΕΡΙ ΣΗΜΕΙΩΣΕΩΝ

[ἆρ' οὐ διὰ τὸ παρ' ἡμῖν]
Col. Iª [ῥοιὰς καὶ συ]κ̣ᾶ̣ς̣ ε̣ἶνα̣[ι καὶ] λέ-
[γειν ἔστι κα]τὰ τὴν ὁμοι-
[ότηθ', ὅτι παν]ταχο̣ῦ̣ εἰσιν
[αὗται; ἀφα]νεῖς μὲν ἑκά-
[τεραι· ὅτι δὲ παρ'] ἡμῖν ταῦτ' ἐ̣σ̣-
[τίν, κἂν τοῖς ἀδή]λοις ταῦθ' ὑ-
[πάρχειν οὐ] δέον· περὶ τὰ
[δ' ἄλλα] φυ̣[τε]ύ̣ματ̣[α τ]ἂν τοῖς
[ὁπουδ]ή̣[πο]τ̣ε̣ τ[ό]π̣ο̣[ι]ς δέο[ν, ὅτι]
[παρ' ἡμῖ]ν οὐκ ἔστι[ν] τ̣αῦτα, μ̣η-
[δ' ἐν ἄ]λ̣λοις ὑπάρχε[ι]ν ταῦτα;
[οὐ μὴν ἀλ]λ̣' ὁ ἐκ τοῦ πα[ρ'] ἡ̣μῖν μ[ή]
[τιν' εἶναι] μηδ' ἐν τ̣ο[ῖς] ἀδήλοις
[συνά]γων τ[ρ]όπ̣[ος τὸ ἀν]α̣γκαστι-
[κὸν οὐ προσφ]έρ̣ε̣ται.

desunt aliquot lineae

[τὸ κοινὸν σημεῖ-]
I ον, ὅτι μο[χ]θη[ρό]ν ἐστ[ιν, ἐν] ἄλ-
λοις διστάσ[ομ]εν· καὶ μὴν δι' οὐθὲν
ἕτερον κοινόν ἐστιν ἢ διότι
καὶ ὄντος τοῦ ἀδήλου καὶ μὴ ὄν-
τος ὑπάρχειν τοῦτο δύναται.

ΠΕΡΙ ΣΗΜΕΙΩΣΕΩΝ *vide supra*, pp. 10–11.
Col. Iª 1–15 Ph. *R.M.* LXIV, 18.
[ἆρ' οὐ] Ph. *ep.* [ἆρα μὴ] Ph. *R.M.* LXIV, 18.
I 1–2 Ph. *R.M.* LXIV, 19.

CHAPTER III

Text and Translation

PHILODEMUS

ON METHODS OF INFERENCE

Col. I[a] "Is it not true [1] that by the method of analogy it is possible to say that since there are pomegranates and figs in our experience, they exist everywhere? Yet both are unperceived, and it is not necessary that because they exist in our experience they exist also in places that are not perceived. And is it necessary to infer about all other plants, in whatever places they may be, that if they do not exist in our experience, they do not exist elsewhere? On the contrary, a method which infers that since something does not exist in our experience it does not exist in unperceived places is not cogent.

"(The analogical inference of the Epicureans is invalid because it is based on common signs, not on particular signs.)
I We (Stoics) [2] shall question elsewhere the validity of common signs; and indeed a sign is common for no other reason than that it can exist whether the unperceived object exists or not.

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[1] The work, as it has been preserved, begins abruptly in the midst of a presentation of Stoic arguments which attack Epicurean methodology. The first argument here presented (actually the third of a series—see below, 49) points out the absurdity of inferring empirically from the existence of things in our experience to their existence elsewhere. The Epicurean reply to this argument is given in XII.36–XIV.2.

[2] The second Stoic argument is that inference based on signs is valid only in the case of particular (ἴδια) signs, not of common (κοινά) signs. But particular signs are established by the formal method of contraposition; hence analogical inference should be rejected. The Epicurean answer to this argument is given below, XIV.2–27. See also below, 162–163. The distinction between common and particular signs occurs frequently in Greek philosophy, e.g. Sextus *Adv. Math.* VIII.143; Cic. *Lucullus* 33–34. Cf. also Sextus' distinction between indicative and admonitive signs (below, 172–174).

τόν γέ τοι νομί[ζ]οντα [ὡ]ς χρηστὸς ὅδε τίς ἐστιν ἄνθρωπ[ο]ς ἕνεκα τοῦ πλουτεῖν μοχθη[ρῷ] φαμεν καὶ κοινῷ χρῆσθαι σ[η]με[ίῳ δι-] ὰ τὸ πολλοὺς μὲν πλ[ου]τοῦ[ν]τας ἀτόπους εὑρίσκεσθαι [π]ολλο[ὺς] δὲ χρηστούς. ὥσ[τ]ε τὸ ἴδιον εἴ[περ] ἀναγκαστικὸν ἀδυνατεῖν ἄλ- [λ]ως ὑπάρχειν ἢ σὺν τῷ ὃ εἴπα- [μ]εν αὐτοῦ κατ' ἀνά[γκ]ην [ε]ἶνα[ι] ἀφανές, οὗ σ[η]μεῖόν ἐ[σ]τι, μη[δέ-] [π]οτε μην[ύειν τὸ] ἄδηλον οἷ[όν] [τε] τῷ κ[αθ' ὁμοιό]τητ[α τρό]πῳ [τ]ῆς σημ[ειώσεως]· ἔ[τι δὲ] πρ[ὸς] [τ]ὰ μοναχὰ [δοκεῖ μάχεσθαι ἡ] [τ]ῶν ὁμοίων σ[ύνθεσις· οὐ γὰρ ἀνα-] [γ]κάζειν ὁ διὰ τῆς ὁ[μοιότη]τος ἔοικεν τρόπος ε[ἰ λίθων] πολλῶ[ν] καὶ παντ[οδ]απῶν [ὄντ]ων ἕν ἐσ- τι τούτων εἶδος ἐπι[σ]πώμε- νον τὸν σίδηρον, ἣν [κ]αλοῦσιν μα[γ]νῆτιν λίθον οἱ [δ'] Ἡ[ρ]ακλε- [ῶτιν], μόνον δὲ καὶ τὸ ἤλεκτρον [ἑλκυσ]τικόν ἐστι τῶν ἀχύρων· [καὶ τε]τράγωνος ἀριθμὸς εἷς μόνος ὁ τέτταρ' ἐπὶ τέτταρα τὴν περίμετρον ἴσην ἔχει τῷ

13–14 ἀλ|[λ]ως D. ἀλ[λ]|ως G.
14–15 εἴπα|[μ]εν Ph. *R.M.* LXIV, 19. εἴπα[μ]|εν G.
16–21 Ph. *R.M.* LXIV, 19.
21–22 [ἀνα]|[γ]κάζειν D. [ἀναγ]|κάζειν G.
23 [λίθων] Usener, *Epic.*, 208 n. [ὄντων] G.
24 [ὄντ]ων ἕν ἐσ|τι Usener, *ibid.* [λίθ]ων ἐν ἔσ|τι G.
27–28 Ἡ[ρ]ακλε|[ῶτιν] Ph. *R.M.* LXIV, 19. Ἡ[ρ]ακλε|[ίαν] G.
29 [ἑλκυσ]τικόν Usener, *l.c.* [ἐφελκ]τικόν G.
30 [τε]τραγώνων ἀριθμῶν Bahnsch, 13. Ph. *R.M.* LXIV, 19. εἷς O. Bücheler, 312. εἴ γ[ε] Ph. *R.M.* LXIV, 19. εἰ G.

We say that anyone who thinks that a certain man is good because he is rich is using an unsound and common sign, since some men who are rich prove to be bad and some good. Therefore if the particular and cogent sign cannot exist except along with the unperceived object which, we said, is by necessity connected with it, and of which it is the sign, it would never be possible to reveal that which is unperceived by means of the analogical method of inference.

"Furthermore, the synthesis of similars seems to conflict with unique cases.[3] For the method of analogy does not seem to be cogent: If there is among the great variety of stones one kind of stone that draws iron, which is called the magnet or the Heraclean stone;[4] and likewise if only amber is capable of attracting chaff; and if the square of four is the only square which has its perimeter equal to its area,[5] how, then, can we

[3] The Stoic argument from unique cases (*μοναχά*) follows. The existence of unique cases in our experience weakens any empirical inference, since there may be equally unique cases beyond our experience. Empiricism cannot establish limits of variation. Philodemus answers this argument in XIV.28–XVI.4. The fourth trope of Aenesidemus against the aetiologists reflects a similar criticism of the use of analogy (Sextus *Pyrrh. Hyp.* A.182).

[4] The magnet was often called the Heraclean stone, e.g. Plato *Ion* 533D; Epicurus Fr. 293 (Usener).

[5] That is, the geometrical square of four units has a perimeter of 16 units and an area of 16 units.

ἐμβαδῷ, πόθεν οὖν ἔχομεν εἰπεῖν ὡς οὐκ ἔστιν τι γένος ἀνθρώπων ὃ μόνον οὐκ ἀποθνήσκει διαιρούμενον τὴν καρδίαν, ὥστε μὴ κατ' ἀνάγ[κην εἶ]ναι λαβε[ῖν ἐκ τοῦ] τοὺς

II

παρ' ἡμῖν ἀνθρώπους διαιρουμένους τὴν καρδίαν ἀποθνήσκειν τὸ καὶ πάντας; καὶ σπάνια δ' ἔστιν παρ' ἡμῖν ἔνια, καθάπερ ὁ γενόμενος ἡμίπηχυς ἄνθρωπο[ς] ἐν Ἀλεξανδρείᾳ κεφαλὴν δὲ κολοσσι[κ]<ή>ν ἔχων ἐφ' ἧς ἐσφυροκόπουν, ὃν [ἐ]πεδείκνυον οἱ ταρειχευταί, [κ]αὶ ὁ γαμηθεὶς ὡς παρθένος [ἐν] Ἐπιδαύρῳ κἄπειτα γενόμ[εν]ος ἀνήρ, καὶ ὁ γενόμενος ἐν [Κρή]τῃ πηχῶν ὀκτὼ καὶ τεττ[αρά]κοντα τοῖς ἐκ τῶν εὑρεθέν[των] ὀστῶν σημειουμένοις, ἔτ[ι δ' οὓ]ς ἐν Ἀκώρει πυγμαίους δ[εικνύ]ουσιν, ἀμέλει δ' ἀνα[λ]όγο[υς τοῖς οὓς] Ἀντώνιος νῦν ἐξυρία[ς ἐκο]μίσ[ατο. εἰ δ' οὖν ἐξ][ῆ]λθεν [τὰ προ]κείμ[ενα πανθ' ἃ εἰ][θίσ]μεθ[α ἢ] οὐκ ἔοικ[ε τ]ούτοις, ἔχομεν [ζη]τεῖν, εἴ τι καὶ [τούτων], ὑπὲρ ὧ[ν συ]ντιθέμε[θα τὴν ση]μείωσ[ιν], ὅτι οὐκ ἔστιν [τι]σ[ί]ν ἄ[ρ]μενον [ἔ]νια δ' ὑπερβολὴ[ν ἔχει] κατὰ [τόν]δε τὸν κόσμον. ὅταν δὲ κα[ταξ]ιῶμεν· ἐπεὶ οἱ παρ' ἡμῖν ἄν[θρω]ποι θνητοί εἰσι, καὶ

II 18–24 Ph. *R.M.* LXIV, 19.

21 [τούτων] <ἐξέρχεται πάνθ' ἃ εἰθίσμεθα κτλ> Ph. *ibid.*

23 ἔστιν O. ἔστι τ[ι]σ[ί]ν Ph. *ibid.*

say that there is not some exceptional race of men who do not die when the heart has been pierced? Therefore, proceed-
II ing from the fact that men in our experience die when the heart has been pierced, we cannot conclude by necessity that all men do. There are also in our experience some exceptional things, as for example, the man in Alexandria half a cubit high, with a colossal head that could be beaten with a hammer, who used to be exhibited by the embalmers;[6] the person in Epidaurus who was married as a maiden and then later became a man;[7] and the person in Crete who was forty-eight cubits tall, according to those who examined the bones that were found;[8] and further, the pygmies that they show in Acoris,[9] who are quite analogous to those which Antony recently brought from Syria.[10] If these examples are exceptions to all things with which we are familiar or if they are not similar to things in our experience, we can ask whether any one of the things about which we make our inferences (is not abnormal), because there are some things to which it does not conform. For certainly some things in this world deviate from the normal.

"Whenever we judge:

'Since men in our experience are mortal, all men are,'

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[6] This particular dwarf of Alexandria is apparently not mentioned by any other ancient author.

[7] The maiden of Epidaurus who became a man is mentioned in Phlegon of Tralles *Mirabilia* 8 (ed. A. Westermann, Παραδοξόγραφοι, 132–133). Cf. Aulus Gellius IX.4.15; Pliny *N.H.* VII.4.(3).36.

[8] The giant of Crete appears in Pliny *N.H.* VII.16.(16).73, and Solinus 1.91, where the story is somewhat elaborated. Solinus dates the discovery of the bones in 69–67 B.C.

[9] Acoris is a town in Egypt; see 'Ακῶρις in Preisigke, *Wörterbuch der Griechischen Papyrusurkunden*, III Abs. 16a; cf. "'Ακορίς," in Pauly-Wissowa-Kroll, *R.E.*, I.1186 (Pietschmann).

[10] ἐξυρίας, probably a misspelling for ἐκ Συρίας; cf. Mayser, *Grammatik der Gr. Papyri* I.225; see above, 11–12. Philodemus mentions Antony in two other passages; see above, 2, note 6.

τοὺς π[άντας, τ]ὸ διὰ τῆς ὁμοιότ[η]το̣[ς ἕξει εἰ] κατὰ πάντα τοὺ[ς ἐν τοῖς ἀδή]λοις ὁμοίους ὑπο[τιθέμ]εθα τοῖς παρ' ἡμῖν, ὥστε κ[αὶ κατ]ὰ τὸ θνητοὺς ὑπάρχειν, [οὐ τού]του χωρίς. εἰ μὲν γὰρ κατὰ [πάν]τα, καὶ κατ' αὐτὸ τοῦτό γ' ὀ[ρθ]ό̣τατα σημειωσόμεθα. τ[οιοῦ]τος γὰρ ὁ τρόπος ἔσται δήπ̣[ουθε]ν· ἐ[πε]ὶ οἱ παρ' ἡμῖν ἄνθ[ρωποι θνητ]οί ε̣ἰσιν κα[ὶ εἴ]

III που κατ' ἄλλους τόπους εἰσὶν ἄνθρωποι τοῖς παρ' ἡμῖν ὡμοιωμένοι κατά τε τἆλλα καὶ κατὰ τὸ θνητοὶ εἶναι, θνητοὶ ἂν εἴησαν. τ[ὸ] γὰρ κα[ὶ σ]υ̣ν̣[τ]εθὲν τῷ σ[η]μείῳ τ[ούτῳ οὐ] διοίσει τοῦ σημείου ἀφ' [οὗ καὶ] αὐτ[οὶ] σημειούμεθα. εἰ [μ]ὲν [ὁ]μ̣ο̣ιό[τ]ητα ὑποτι[θ]έμεθα, καὶ τοιοῦ[τ]ό τι λέγομεν· ἐπεὶ οἱ παρ' ἡμῖν [θν]ητοί εἰσιν ἄνθρω[ποι, κ]α̣ὶ εἴ πού [εἰσ]ιν θνητοὶ ἄ[ν]θρω[ποι, θν]ητοί [εἰσι]ν. εἰ δ' οὐχὶ καὶ κατὰ [τὸ θνητ]ο[ὺς ὑπ]άρχειν ὁμο[ί]ους [ἐκείνο]υς ὑ[πο]τιθέμεθ[α], [ὑπ]έ[ρ ὧν ση]μει[ούμ]εθα, ἀλλὰ τα[ύ][τ]η̣ [π]αρ[αλ]λ̣άττον[τας] καὶ διαφερ[ό]ν̣[τως ἔχ]οντα[ς τῶ]ν παρ' [ἡμῖν] τοὺς ἐ[ν τοῖ]ς̣ ἀδή[λοι]ς, οὐκ [ἔχει] [τ]ὴ[ν ἀ]ν[ά]γκην [ἡ ση]μείωσις· [οὐ]κ ἄ-

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33 [οὐ τού]του H. Fraenkel [ἢ τού]του G.

III 6 [οὐ] *vel* [τί] Ph. *R.M.* LXIV, 20.

8 [ὁ]μ̣ο̣ιό[τ]ητα D. [ἕτ]ερα [τα]ῦτα Ph. *R.M.* LXIV, 20. [ἀμφότ]ερα τ[α]ὐτὰ Ph. *ep.*

14–22 Ph. *R.M.* LXIV, 20.

18 [ἔχει] *vel* [ἂν ἔχοι] Ph. *ibid.* [ἔχει] G.

the method of analogy will hold if we assume that men who are in unperceived places are similar to men in our experience in all respects, so that they will be similar also in respect to mortality; without this assumption it will not be valid.[11] For if they are similar in all respects, we shall be correct in inferring that they are similar in respect to mortality. The correct form of the argument will be of this kind:

> 'Since the men in our experience are mortal,
> III 'If there are men in other places who are similar to men in our experience in all respects, including mortality,
> 'They are mortal.'

This method of inference is identical with the method which we ourselves use. If we assume the similarity and say something like this:

> 'Since the men in our experience are mortal,
> 'If there are mortal men anywhere,
> 'They are mortal,'

(the inference will be valid).[12] But if we do not assume that those about whom we infer are similar also in being mortal, but do assume that those in unperceived places vary in this respect and differ from the men in our experience, the inference will not be necessary. Therefore it will not be necessary that

[11] This next Stoic argument is that inductive inference is not valid unless it assumes that the unperceived is like the apparent. The Epicureans fail to recognize the formal requirements of all valid inference. The Epicurean answer to this argument is in xvi.4–xvii.28.

[12] This conclusion seems to be required to complete the meaning of the passage. There is no lacuna here.

[ρ'] ἀṿ[αγ]καῖον ἔ[σται] τοὺ[ς ἐν ἀδή][λοις ἀ]νθρώπ[ους] ε[ἶ]ναι θν[ητοὺς] [καὶ αὐ]τούς, ἀλ[λὰ τού]τους κα[τὰ] [τἆλλα μὲν] ὁμοίου[ς] κατὰ δὲ τὸ [θνητοὺς ὑ]π̣ά[ρχειν διαλλ]άττον[τας μηδὲ κ]ατὰ το[ῦτ' ἐ]οικέναι τοῖς [παρ' ἡ]μῖν. καθό[λο]υ τ' εἰ κατα[ξ]ι̣ο̣ῖ· [ἐπε]ὶ οἱ παρ' ἡμ[ῖν] ἄν[θρ]ωποι [θν]ητοί εἰσιν, καὶ ε[ἴ πού εἰσιν ἄ]νθρω[πο]ι θνητοὺς ε[ἶναι· εἰ τοῦτο] μὲν ἴσον αὐ[τῷ τούτῳ· ἐπεὶ οἱ πα-]ρ' ἡμῖν ἄνθ[ρωποι ᾗ] ἄν[θ]ρωποι καὶ καθὸ ἄνθ[ρωποί] εἰσι θνητοί εἰσιν, καὶ τοὺς π[αντ]αχῇ θνητοὺς ὑπάρχειν, ὀρθ[ῶς ἀ]ξιώσει τοῦτο. εἰ δὲ ἄλλω[ς συ]μβεβηκότος τούτου τοῖς π[αρ'] ἡμῖν ἀνθρώποις, τοῦ θνητ[οὺς] εἶναι, ἀξιώσει, ἐπεὶ οἱ πα[ρ' ἡμῖ]ν εἰσι θνη-

IV τοί, καὶ τοὺς πανταχῇ θνητοὺς εἶνα[ι], ματαίως ἀξιώσει. μὰ Δία γὰρ οὐδ' ὅτι οἱ παρ' ἡμῖν εἰσιν ὀλιγοχρόνιοι [κ]αὶ τ[οὺς] 'Ακροθωίτας ἐροῦμεν ὀλιγο[χρο]νίους εἶναι. δεικτέον τοίνυν [καὶ το]ὺς ἀνθρώπους ᾗ καὶ καθ[ό] εἰ[σιν ἄνθ]ρωπ[ο]ι θνητοὺς ὑπάρ[χειν], εἰ μέλλο[μ]εν ἀναγκαστ[ικὸν τ]ὸ προ[κεί]μενον συστῆσ[αι· δυνάμ]ενο[ι δὲ κα-]τ' ἀ[ν]ασκευ[ὴν] τοῦτο δει[κνύ]ε<ι>ν τὸν κατὰ τ[ὴν] ὁμοιότητ[α] παρήσομεν τρ[όπον· ε]ἰ δὲ κ[ατὰ τ]ὴν ὁμοιότη[τα τὴν τῶν σημείων πο]ι[η-]

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25 [μηδὲ κ]ατὰ Ph. *R.M.* LXIV, 20.
28 ε[ἴ πού εἰσιν ἄ]νθρω | [πο]ι Ph. *R.M.* LXIV, 20.
IV 13–16 Ph. *R.M.* LXIV, 20.

men in unperceived places also be mortal; they may be similar in all other respects to men in our experience but different in respect to mortality, and not in this respect like men in our experience. And generally, if one judge:

> 'Since men in our experience are mortal,
> 'If men exist anywhere,
> 'They are mortal;'

and if this is equivalent to the following:

> 'Since the men in our experience, in so far as and according as [13] they are men, are mortal,
> 'Men everywhere are mortal,'

he will make a valid judgment. But if on the other hand the property of being mortal is an accident of men in our experience, and if one should judge:

IV 'Since men in our experience are mortal,
> 'Men everywhere are mortal,'

his judgment will be invalid. For, by Zeus, not because men in our experience are short-lived shall we say that the Acrothoites also are short-lived.[14] Therefore one must demonstrate that men, in so far as and according as they are men, are mortal, if we are going to establish the above-mentioned inference as logically necessary. Since we are able to demonstrate this by contraposition,[15] we shall disregard the method of analogy; and if we use the method of analogy in making a

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[13] *ᾗ καὶ καθό*. As an extension of the preceding argument the Stoics say that valid inference must be based on the nature of things "as such." The Epicurean analysis of the meanings of *ᾗ* and *καθό* is given in XXXIII.21–XXXIV.24. See below, 168.

[14] The Acrothoites were the inhabitants of the promontory of Mt. Athos. Their longevity was proverbial; cf. Pliny *N.H.* VII.2.(2).27; Pomponius Mela II.2.32; Solinus 11.34.

[15] *ἀνασκευή*, an important technical term; cf. below, 160.

σόμεθα σύ[νθεσιν, πάλιν εἰς τὴ]ν
αὐτὴν ἐμ[πεσούμεθα κακίαν].

17–24 legi non possunt.

ειναυτ[διὰ τῆς ἀνασ-]
κευῆς τοῦτ[ο παρή-]
σομεν τὸν κ[ατὰ τὴν ὁμοιότη-]
τα τρόπον, ε̣[ἰ δὲ διὰ τῆς ὁμοιό-]
τητος, εἰς τὴν αὐτὴν [κακίαν]
ἐμ[π]εσούμεθα, ὥστε κ[αὶ ὑπο-]
λαμβάνεσθαι τὸ μὴ ἀ[ναγκασ-]
τικὸν εἶναι τὸν κατὰ τ[ὴν ὁμοι-]
ότητα τρόπον τῆς ση[μειώσε-]
ως· ὅλως τ' εἴπ[ερ ἀν]αγ[καστι-]
κὸς οὗτο[ς ὁ τρόπος ἐστίν, τὰ]
ἄ̣δ[ηλα ὑποτίθεται ὅμοια τοῖς]
[παρ' ἡμῖν. ἔτι δὲ κατὰ τὴν]
[ὁμοιότητα σημειωσόμεθα]·

V

ἐπεὶ πάντα τὰ παρ' ἡμῖν σώμα-
τα χρόαν ἔχει, σώματα δ' εἰσὶ
καὶ αἱ [ἄτ]ομοι, κἀκεῖναι χρόαν
ἔχουσιν, <ἢ> ἐπεὶ πάντα τὰ [παρ' ἡ]μῖν
σώματα φθαρτά ἐ[στιν, σώμ]α-
τα δ' εἰσὶ καὶ αἱ ἄτομοι, φθαρτὰς
εἶναι ῥητέον καὶ τὰ[ς ἀ]τόμο[υ]ς.
ἀπὸ ποίας θ' ὁμοιότ[ητος] ἐπὶ
ποίαν δεῖ μεταβαί[νειν], ἀ̣π' ἀν-
θρώπων ἐ[π'] ἀνθρώπ[ου]ς λόγου
χάριν, καὶ τ[ί] μᾶλλον ἀπ̣ὸ τού[των]
ἐπὶ τούτους ἢ ἀπὸ ζ̣ώων ἐ-
πι ζῷα, ἀλ[λ'] ἀπὸ ζ̣ώ[ω]ν ἐπ[ὶ ζῷα] ;
[κ]αὶ τί μᾶλλον <ἢ> ἀπὸ [σωμάτων]
ἐπ[ὶ σ]ώ̣ματα ; ἀλλ' αὖ [ἀπὸ σωμάτων]

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25 ειναυτ O.
28 ε̣[ἰ δὲ] D.
35–38 D.
V 13–30 Ph. *R.M.* LXIV, 20–21.

synthesis of signs, we shall fall again into the same error. . . .

And therefore we maintain that the analogical method of inference is not cogent; and on the whole if it is cogent, it must assume that unperceived objects are like those in our experience.

"According to the method of analogy one ought to infer
V that since all bodies in our experience have color, and atoms are bodies, atoms have color; or since all bodies in our experience are destructible, and atoms are bodies, atoms must be admitted to be destructible.[16]

"From what kind of similarity to what other kind ought we to infer? From men to men, for instance? And why is it better to infer from men to men rather than from the animate to the animate? [17] But ought we to infer from the animate to the animate? And why thus rather than from bodies to bodies? But again ought we to infer from bodies to bodies?

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[16] In this argument the Stoics are trying to show that the dogmatic metaphysics of the Epicureans is not consistent with their empirical method; see below, 164, 169–170. xvii.28–xviii.17 gives the Epicurean answer.

[17] The Stoics next ask on what basis an inference between objects closely related is preferable to an inference between objects related only generically. For the Epicurean answer, see xviii.17–xix.4.

[ἐπὶ σώ]ματα κ̣αὶ τί [μᾶλλον ἢ ἀπὸ] [τῶν ὄντω]ν̣ ἐπ[ὶ τὰ ὄντα] ;

18–23 legi non possunt.

πρ̣ότερον μᾶ[λλον οὖν ἀ]π[ὸ τῶ]ν̣ ἐγγυτάτω[ν ἐπὶ τὰ ἀ]νώ[τα]τα ὁ̣μογενῆ μεταβ̣η[σ]ό̣μ̣[εθ' ἢ] ἀπὸ τῶν [καὶ] τοῖς σώμασι[ν] καὶ ψυχαῖς [μά]λισθ' ὡμ[οι]ωμέ̣ν̣ω[ν ἀν]θρώ[π]ων ἐπὶ το[ὺς] ὁμογεν[εῖς ; οὐ]κ ἄρα χρησόμε[θ]α τῷ κ[αθ' ὅμοιον] ἐπειδὴ οἱ π[α]ρ' ἡμῖν ἄνθ[ρωποι] θνητοί, καὶ [ο]ἱ̣ ἐν Λιβύῃ θν[ητοὶ] ἂν εἴησαν ση[μεί]ῳ̣ μᾶλλον τ[οῦ] ἐπεὶ τὰ παρ' [ἡ]μῖν ζῷα θνητά ἐ[σ]τιν, καὶ ε[ἴ τιν]α ἐν τῇ Π[ρε]ταννικῇ ζῷά ἐ[στι]ν, θνητὰ ἂν εἴη. [ἐπ]εὶ δὲ καὶ [το]ύτοις χρ[ῆ]σθαι [κατὰ] τὰ [πράγματα π]ε̣ι̣ρασθε̣ίη̣-

VI s ἄν, πότερον τὸ ἀπ[α]ράλλακτον εἰς τὴν [σ]ημείωσιν παραληψόμεθα ἢ τὸ ὅμοιον ἢ τὸ πόσην ἔχον προσεμφέρεια[ν] ; τὸ μὲν οὖ̣ν ἀπαράλλακτον λέγ[ε]ιν γελοῖον· τί γὰρ μᾶλλον ἔσται τὸ φανερὸν τἀφανοῦς σημεῖον ἢ ἀντιστ[ρό]φως ; οὐκ ἔσται τε ἔτι τὸ μὲν φα̣νερὸν τὸ δὲ ἄδηλον, ἀπαρ[αλ]λαξίας ὑπαρχούσης. εἰ δὲ τ[ὸ] ὅμοιον, πόθεν ἕξομεν εἰπ[εῖν] ὡς οὐχὶ παρ' ἣν ἔχει διαφορὰν [καὶ πα]ραλλάτ[τ]ει τ̣οῦ φαι̣νομένου [ἀφ'] [ο]ὗ ποιού[μ]εθα τὴν σημε[ί]ωσιν ;

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33 ση[μεί]ῳ̣ Ph. *R.M.* LXIV, 22.
38–1 Ph. *R.M.* LXIV, 22.

And why thus rather than from beings in general to beings?

. . . Shall we infer from the narrowest to the broadest (classes) of the same genus, or from those men most similar in bodies and souls to those of the same class? We shall not, therefore, use the analogical argument:

> 'Since men in our experience are mortal,
> 'Men in Libya are also mortal,'

in preference to the argument:

> 'Since living creatures in our experience are mortal,
> 'If there are any living creatures in Britain,
> 'They are mortal.'

VI "And when you try to apply these inferences to objects, shall we take identity as the basis of signification, or similarity, or what degree of resemblance?[18] It is ridiculous to say identity. For why will the appearance be the sign of the unperceived rather than the reverse? No longer will the one be apparent and the other unperceived if there is identity. If we base the inference on similarity, how shall we be able to say that the unperceived object does not, by virtue of its distinct nature, differ from the apparent object from which we make the inference? . . .

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[18] The following Stoic argument is again concerned with the basis of analogy. The completely alike cannot be the basis, since there is then identity, and sign and signified are indistinguishable. Partial similarity is not a sufficient basis, as the differences present might destroy the validity of an inference. See below, 164–165, 170–171. An Epicurean answer to this problem may be found in XXII.2–28.

[ ]\εγ[μ]ᾶλλον ἐκ[ ]
[ ]τοιοῦτ' ο[ὐ]κέτ[ι] κ [ὁ-]
[μο]ιότης̣ κ[ ]σρσκ[ ]
[πρὸ]ς ὁτιο̣ῦν [ ]
[ ]σομε[θα προσ-]
[εμφ]έρεια[με-]
[ταβ]αίνωμεν[ ]
[ ]ἤπερ ἡ κα[ ]>Λ[ ]
[ ]τηκαταστ[ ]εβ[ ]
[ ]ον ὑπάρχειν. εἰ μὲ[ν ἀπα-]
[ράλλακ]τα ληψόμε[θ'], οὐκ ἔ[σται]
[τὸ μὲ]ν ἄδηλον τὸ δὲ φα[νερόν].
[εἰ δὲ κ]ατά τινα τοὔ[μπαλ]ιν, πει[[σ]]-
[σθέντε]ς ποιότητι πα[ρ]αγεν[ομέ-]
[νη̣, ση]μειωσόμεθα περὶ τῆ[ς ὁμοι-]
[ότητος κἀ]πὸ ταύτης περὶ τῶν ἀδ̣ή̣-
[λω]ν̣, εἴτε τὸ ἦ̣ τ[όδ]ε τοιοῦ[τ' ἐσ-]
[τ]ὶν ἐ̣π̣[ιλη]φθε̣ί̣[η] προσηκό̣[ν-]
[τ]ως, ἀπρόβατος ὁ λόγος ἡ-
[μῖν]. τ̣οῦτο γὰρ διὰ λόγου κα-
[τασκευ]α̣σθήσεται καὶ διὰ ση-
[μειώσε]ω̣ς· καθ' ὁμ[ο]ιότητα
[μὲν οὖν] προάγ[ο]ν̣τ[ες] εἰς ἄπε[ι-]
[ρον ἐκβ]ησόμ[εθα πάντω̣]ς, τοῦ[το]
VII τὸ εἰ ἦ̣ τόδε το[ῦτ]ο̣ ἄδηλ[ο]ν̣ ἔχον-
τες, ὥστ' ἀτελῆ τὴν σημ[εί]ωσιν
εἶναι· διὰ δὲ τῆς ἀνασκευ[ῆ]ς προ-
άγοντες, ὅτι μόνη τὸ βέβ[αι]ον ἔ-
χει, κ[υ]ρώσομεν. πειρᾶτα[ί τ]ε Διο-
νύσιος πρὸς ἃς φέρουσιν ἀντιρρή-
σεις [οἱ π]αρ' ἡμῶν φιλοτεχνεῖν·
φασκ[όν]των γὰ[ρ] ὅτι καὶ δι[ὰ] τοῦ

VI 15–24 Ph. *R.M.* LXIV, 22.
27–34 Ph. *R.M.* LXIV, 22.
33–34 ἡ|[μῖν] D. ἦ|[μήν] G.
37–1 Ph. *R.M.* LXIV, 22.

If we take things completely alike, no longer will the one be unperceived and the other apparent. But if in some cases, on the other hand, relying on a quality that happens to be present we infer some similarity and from that make an inference about the unperceived, even if the nature of a thing as such be grasped in the proper way, our argument is inconclusive. For the nature of a thing as such is established by rational inference. If we proceed by similar-
VII ity, an infinite regress will always result, since we do not perceive the nature of things as such; therefore the inference will be incomplete. But if we proceed by the method of contraposition we shall establish that it alone has certainty."

Dionysius[19] tries to refute by sophistry the answers which our school makes; for while we claim that the method of

[19] Dionysius of Cyrene was a pupil of Antipater of Tarsus, and was especially famous as a Stoic mathematician; see Pauly-Wissowa-Kroll, *R.E.*, *s.v.* "Dionysius," No. 122. v.974. He is mentioned by Philodemus in other works also. From this passage and xi.13–14 it seems certain that all of the Stoic arguments in the first ten columns were taken from him.

κατ' [ἀν]ασκευὴν τρόπου πάντως ὁ κα[θ' ὁ]μοιότητα διήκει κ[αὶ] βεβαι- οῦτα[ι δ]ὲ ἐκεῖνο[ς] διὰ τού[τ]ου, πλα- νᾶσ[θαί] φησιν αὐτοὺς ὑπὸ φωνῆς κοινό̣[τητ]ο̣ς̣, ἐπ̣[ει]δήπερ [ὁ]μοιό- τητ[α λέγομ]έ̣ν̣ [τε τοῦ φαν]ε̣ροῦ κ[αὶ τάφα]ν̣ο̣ῦ̣[ς κοινωνίαν κ]αὶ ἐ[πὶ τῆ]ς [σημε]ιώσεως α̣[ὐτ]ῆ̣ χρώ- [μεθα· καὶ μή]ν̣ [φησι καθ' ἃ μὲν ἰδ]ί̣α̣ με[τὰ τὰ πρ]άγμ[ατα ἐκ] τῆς ὁ- μοιό[τητος] σημειω[σόμεθα], καθ' ἃ [δ' ἐκ] τῆς ἀν[α]σ[κευῆς ὥστ' ἠ]σ- χολῆ[σθ' ἐφ'] ἑκατέ[ραν, πᾶσαν τὴν ἐ-] νάργειαν καὶ τὴν κα[τάληψι]ν ἀναγκαίαν εἶναι ν̣ο̣[μίζοντας] καὶ τὴν ὁπωσδήποτε κα[λου-] μένην ὁμοιότητα χρησίμην ὑπολ[α]μβάνοντας. ἔτι δὲ λε- γόν[τω]ν, ὡς καὶ τὰ τερατώδη πρός [τιν' ὅ]μοια, ʽκαὶ αὐτούς, εἰ μὴ τ[ὰ π]αρ' ἡμῖν ὅμοια τούτοις, οὐχ ὑ[πά]ρχειν ἀποκόψομεν' τῷ̣ τε κ[ατ' ἀ]νασκευὴν ἀποκό[πτ]ειν φησ[ίν. οὐ] μὴν ἀλλ' ἐπαρκέ[σει] ἡ- μῖν [τό τε] πεπεῖσθαι περὶ τ[ο]ύ- τω[ν καὶ π]ερὶ τῶν ἐκ τῆς πε[ί]ρας κατ[ὰ τὴν] εὐλογίαν, ὃν τρόπ[ο]ν ὅτι [γενη]σόμεθα πλ̣έοντες θέρ[ους] ἐν ἀσφαλεῖ̣ π̣[εῖραν τ]ο̣ῦ̣ τῆ[ς ὥρας οὔ]ρου ἔχ[οντες. κε-]

VIII

νόν τέ φησιν εἶνα[ι τὸ] προστιθέ-

VII 13–21 Ph. *R.M.* LXIV, 23.
17 [καὶ μή]ν̣ [φησι] D. [οὐ μή]ν̣ [ἀλλὰ] Ph.
22 κα[τάληψι]ν Ph. *ep.* κα[τάληψιν] G.
26–30 Ph. *R.M.* LXV, 314.
37–38 Ph. *R.M.* LXIV, 24.

analogy pervades completely the method of contraposition, and that the latter is confirmed by the former, he says that we err because of the ambiguity of the word, since we use the word "analogy" first of the common qualities of the apparent and the unperceived, and second, of the process of inference.[20] Furthermore, he charges, in some cases we infer about objects by our own method of analogy, and sometimes by contraposition, so that we use both principles; and (he charges further) we consider that every appearance and notion is necessarily true and suppose that that which is called analogy in any sense is useful.

Again, when we Epicureans say that monstrous things are similar to something, Dionysius says: "Unless the Epicureans conform to things in our experience, we shall deny that the Epicureans exist, and deny it by contraposition." But (we answer) it will be sufficient for us to base our belief on probability in these matters, just as we do in regard to what is learned from trial; for example, that we shall be safe sailing in summer, since we have had experience of favorable winds in that season.[21]

VIII Dionysius says that the qualification is pointless, that *when-*

[20] The Stoics argue that the word ὁμοιότης is used by the Epicureans ambiguously. The English word analogy has a similar ambiguity, being used concretely and as the name of a logical method.

[21] That is, in some cases the Epicureans are content with probability (εὐλογία) and do not try to attain certainty. For the importance of probability in ancient empirical science, see Chap. IV.

μενον, ὅταν μηδ[ὲν ἀν]τι<πί>πτῃ, τότε δεῖν χρᾶσθα[ι τῷ κ]ατὰ τὴν ὁμοιότητα τρόπῳ. [πό]θεν γὰρ ἔσται λαβε[ῖ]ν ὡς οὐθὲν οὔτε τῶ[ν] φαινομένων οὔτε τῶν προα-ποδεδειγ[μέ]νων; εἰ γὰρ σημει-ωσόμεθα, [δ]ῆλον ὡς ἢ διὰ τῆς ὁ-[μοιότητος ἢ] διὰ τ[ῆς ἀνασκ]ευ-[ῆς]· ἀλλ' ε<ὶ> μ[ὲν] διὰ τῆς ὁμοιότητ[ος], [πά]λιν ἐπ[ερω]τηθήσεται, πόθεν [λημψ]όμε[θ' ὡ]ς οὐδὲ ταύτῃ μά-[χετ]αί τι τῶ[ν] εἰρημέ[νων]· εἰ δὲ [διὰ] τῆς ἀ[νασ]κευῆς [οὐ δεῖ] τοῦ-τον ἀπ[ονεύ]ειν τ[ὸν] τρόπον. [εἴ] τις οὖ[ν εὐ χρῆται τῷ τ]ῆ[ς] [ὁμ]οιότ[ητος] λόγῳ, [οὐκ ἂν παρα-][π]αίοι, καὶ τ[ὸ δ]όγμα [ἀληθεύε-][σθαι νο]μίζο[μ]εν, κἂ[ν μόνον] [ὡ]ς ἐπὶ πολ[ύ] γ' ἐνεύ[ρωμεν τὴν] ὁ[μο]ιότητα· συνεχ[ῶς δ' ἐροῦ-][με]ν ὑπὲρ τοῦ δόγματος· εἰ ὁ [κατ]ὰ τὴν ὁμοιότητα τρόπο[ς] [ἀ]ναγκα[σ]τικὸς οὐκ ἔσ[τι]ν, οὐδ' ὁ [κ]ατὰ τ[ὴ]ν ἀνασκευὴν προσοίσε-[τ]α[ι] τὴ[ν ἀ]ν[άγκ]ην. τὸ γὰρ ὅτι εἰ [ἔστι κίνησις ἔστι] κενόν, οὐ[κ] [ἄλλ]ως κα[ταλαμβ]άνομεν ἢ [τῷ] διὰ τῆ[ς ὁμοιότ]ητος τρόπῳ [κατα]σ[κευάζον]τες τὸ μὴ δυ-[ν]ατὸν εἶν[αι χ]ωρὶς κενοῦ κίνη-

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VIII 14 [οὐ δεῖ] Ph. *R.M.* LXIV, 24. [οὐ δεῖν] G.
16–22 Ph. *R.M.* LXIV, 24.
24 [ἀ]ναγκα[σ]τικὸς D. [ἀ] | ναγκα[σ]τικὸς G.
25 [κ]ατὰ D. [κ] | ατὰ G. προσοίσε | [τ]α[ι] D. προσοίσε[τ] | α[ι] G.
27 [ἔστι] D. [ἔ] | [στι] G.

ever nothing conflicts we ought to use the method of analogy.[22] For how will it be possible to establish that no appearance or previously demonstrated fact conflicts? If we make an inference, it is clear that we do so either through analogy or through contraposition. If we use analogy, the question will again be asked, how shall we establish that not one of the things previously mentioned conflicts with the inference? But if we infer by contraposition, we must not deny the validity of this method.

Yet if anyone uses the argument from analogy properly, he will not fail, and we consider that our statement is true even if we find the analogy only in a large number of cases. We shall continually say in behalf of this theory: If the method of analogy is not cogent, the method of contraposition is not cogent. The proposition:

> "If there is motion, there is void,"

we do not establish in any other way than by the method of analogy, by proving that it is impossible for motion to take

[22] It is impossible, Dionysius contends, for the Epicurean to be sure that there is no evidence whatsoever in conflict with his empirical generalizations.

σιν συντελε̣[ῖσθ]αι. τὰ γοῦν παρακο-
[λ]ουθοῦντ[α πά]ντα τοῖς παρ' ἡμῖν
κινουμέ[νοις, ὧ]ν χωρὶς οὐδὲν
ὁρῶμεν κ[ινούμ]ε[νον], ἐπ[ιλογι-]
σάμενοι, [τούτ]ο̣ι̣ς̣ πά[νθ' ὅσα κι-]
νεῖται κατὰ π[â]ν πρὸς [τὴν ὁμοι-]
ό[τ]ητ' ἀξιοῦμε[ν κιν]εῖσθαι [καὶ]
IX τῷ̣ τρόπῳ̣ τούτῳ̣ τὸ μ̣[ὴ] δυνα-
τὸν εἶναι κίνησιν ἄνευ κενοῦ
γίν[εσ]θαι σημε[ι]ούμεθα. διόπερ,
εἰ βία[ν οὗ]τος οὐκ ἔχει πρὸς ἀπο-
δ[ε]ῖ[ξαι το]ῦτ', [οὐ]δ' ὁ [κ]ατὰ τὴν ἀνα-
σκευ̣[ὴν ὑπ' αὐτ]οῦ [κ]αὶ δι' αὐτοῦ βε-
βα[ιούμενος] ὅ[λ]ος, οὐδ' ἐκεῖνος
ἔχ[ει τὴ]ν ἀ[νάγκ]ην. οὐ χεῖρον δ' ἐ̣-
[στὶν ἐπί] τιν[ων κατὰ τ]ὸν ἐπὶ μέ[ρ]ους
ἀ[ν]α[λογισ]μ̣ὸν̣ [μετα]βῆναι τοῦ λεγο-
μ[έ]ν[ου κατ' ἀπαραλλαξ]ίαν σ̣ημείου·
ἀ[λ]λὰ̣ γὰ[ρ τῶν παρ'] ἡμῶν κατα-
τ[ει]ν̣[όντων τὰ π]ερὶ το[ῦ]τον
[τὸν] κό[σμον ὑπο]κείμ[ενα, ὅ-]
[σ' ὁρ]ῶμ̣[εν], τ̣ο[σαῦθ' ὑπάρ]χειν, [τὸν ἥ-]
[λιον ἀ]ξ[ιοῖ τοῦ φαινομένου]
[πολὺ μ]είζον[α εἶναι] δ̣[ιὰ τὸ ἀ-]
[φ' ἡ]μ[ῶ]ν ἀπ[όστημα· τά γ' ἄλλα πόρ-]
[ρωθεν μεῖον φαί]νον[τα καὶ βρα-]
[δέα θε]ωρεῖσθαι, τὸν δ' ἥ[λιον ἠ-]
[ναντιωμέν]ην ἀποδιδόναι ὄψ[ιν]
[καὶ ταύτῃ ἀντί]στροφον κίν[η-]
[σιν· τὰ γὰρ παρ'] ἡμῖν φαινό-
[μενα πάντα μὲ]ν̣ τὰς χρό[ας π]ό̣[ρ-]
[ρωθεν ἐπ' ἔλαττ]ον θε[ωρεῖ]σθαι
[παραλλάττοντα δι]ὰ̣ τ̣ὸ σ[κ]ο̣πε[ῖ-]

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36 [τούτ]ο̣ι̣ς̣ Ph. *R.M.* LXIV, 24. [τούτ]ῳ̣ G.
IX 6–31 Ph. *R.M.* LXIV, 24–25.

place without void. Establishing by induction [23] all the constant conditions for things that are moved within our experience, apart from which we see nothing moved, we judge by analogy that all objects that are moved are moved in every
IX case under these conditions; and by this method we infer that it is not possible for motion to exist without void.[24] Therefore, if this method (i.e., analogy) does not have the force to prove this inference, neither does the method of contraposition, which is entirely confirmed by and through analogy; hence contraposition is not by itself cogent.

Inference according to partial similarity is in some cases just as valid as inference by the sign which is identical with the thing signified. Though objects in our experience indicate that the things in the universe are such as we see them, Dionysius thinks that the sun is much larger than it appears because of its distance from us.[25] Indeed, other things that are seen at a distance appear to be smaller and to move slowly, but the sun has a contrary appearance and movement. Furthermore, all objects in our experience are observed to have less color when seen at a distance because the coloring appears

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[23] ἐπιλογισάμενοι, an important technical term in Epicurean logic, used in preference to the Aristotelian ἐπαγωγή. Cf. Diog. Laer. x.73; Galen *Subfig. Emp.* (ed. Bonnet), 48–49.

[24] In defense of Epicurean method, Philodemus gives the empirical proof for the statement: If there is motion, there is void. There was wide disagreement as to the analysis of this inference. The Stoics regarded it as an example of contraposition (Sextus *Adv. Math.* vii.214). The Epicureans differed among themselves in their treatment of it, sometimes regarding it as a pure inductive inference (as here and in xxxv.35–xxxvi.2), sometimes as an inference from inconceivability (cf. xxxvii.36–xxxviii.8), sometimes as an inference by the method of contraposition (xii.1–14). They would regard each of the latter inferences as resting ultimately on analogy.

[25] The size of the sun was one of the most debated topics of Epicurean physics. The Stoics maintain that by analogy with the fact that in our experience distance makes things appear smaller than they really are, the Epicureans should hold that the sun is larger than it appears. The Epicureans answer that they need not accept an analogical argument in this case, for the sun is unique (cf. xiv.35). Since the sun is unique in that its brightness does not diminish with distance, it may also be unique in respect to size. Cf. Diog. Laer. x.91; Lucretius v.564–591; Usener, *Epic.*, 39.2 ff.

[σθαι σ]κ̣ιο[ειδῆ καὶ ἀ]χλ̣έαν [τὴν χρῶ]σιν, τὸν [δ' ἥλιον] ἔχοντ[α τρανοτάτην τὴ]ν̣ σφ[αῖ]ραν ἐσ[τερη]μένον [τοῦ] ἀποστήματο[ς πε]φυκό[τ]ος [ἐ]πὶ πολὺ καθαιρεῖν [τ]ὰ με[γέ]θη, [πο]λλαπλασίονά τ' [εἶνα]ι τοῦ φα[ινο]μένου καὶ ταύτῃ ἐ[ξα]λλάττ[ειν] πάντων τῶν παρ̣' [ἡ]μῖν φαι[νομέ]νων, ὡς τὴν σιδηρῖτην λ[ί]θ[ον ἀ]πάντων δι[α]φέρ̣[ουσ]αν ἐπισπᾶσθαι μόνην [τὸν σίδηρο]ν̣. οὕτως δὲ κεινῶν

X

τὸν ἡμέτερον λόγον αὐτοῦ ὑπὲρ τ̣οῦ μέγαν εἶναι τὸν ἥλιον κατὰ τ̣ὸ ὑποκείμενον τοι[α]ύτῃ χρᾶ̣ται σημειώσει· τὰ παρ' ἡμῖν ὅ[σ]α βραδείας ποιεῖται τὰς παρὰ τάπιπροσθετοῦντ' ἐκ[φ]άσεις ἤτοι [π]αρὰ τὸ βραδέω[ς] κι[νε]ῖσθαι [π]άσ[[σ]]χει τοῦτο ἢ παρὰ τὸ μεγάλα σφόδρ' ἔχειν τὰ [μ]εγ[έ]θη· καὶ τὸν [ἥ]λιον οὖν ἀναγκαῖ[ον], ἐπεὶ βραδέως ἐκφαίνεται, τ[ῶ]ν δυεῖν πεπονθένα[ι θ]άτερον· [κ]α̣ὶ βραδέ[ω]ς μὲν οὐ [κι]νεῖται [δή]που, κ̣α[θ]ὸ̣ ἐν δώ[δεχ'] ὥραις τ̣[ὴν] ἀπ' ἀν[α]τολῆ[ς εἰς δύ]σιν [ὁδὸν ἀ]νύει, [δι]άστημ̣[α μέ]γα τ[οσοῦτο] δ̣ιελθ[ών]. [οὐ μὴν τῷ κατ' ἀνασκευὴν] χρᾶ̣ται [ο]ὐδ[ὲ τὸ λέγει]ν τι δ[ιὰ τὰ]ς δια[στάσεις μεταβ]λητ[ὸν] ὁρῶντι [φ]αίν̣[εσθ'] ἀπονευό̣[ντ]ων ἐστίν, ὡς κ[αὶ ὁ] [λόγ]ος αὐτ[οῦ κ]ατὰ τὴν ὁμοιότ[η-]

X 4–5 ὅ|[σ]α D. [ὅσ]|α G.
11 τ[ῶ]ν G. *Zeitschr.*, 708. τ[οῖ]ν G.
17–21 Ph. *R.M.* LXIV, 25.

shadowy or hazy; but the sun has a very bright sphere, and it is not subject to the principle that for the most part distance naturally decreases size, and that distant objects are many times greater than they appear. Thus the sun differs from all the objects in our experience, just as the magnet differs from all other stones in being the only stone which draws iron.

X In attacking our argument that the sun is as large as it appears, Dionysius uses an inference of this kind:

> "All objects in our experience that reappear slowly from behind objects that eclipse them have this character either because they move slowly, or because they are very large.
>
> "Since the sun reappears slowly, it must of necessity have one of these two characteristics.
>
> "But it does not move slowly, since it completes the path from sunrise to sunset in twelve hours, passing through a very great distance;
>
> "(Therefore, it must be very large)."

Surely he is not using the method of contraposition, nor is the statement that a thing appears changed to the spectator because of distance an argument for our opponent. Indeed his argument, which is itself derived from analogy with things in our experience, will likewise be overturned if the method of

[τα τῆ]ν πρὸς τὰ παρ’ ἡμῖν ἐρευ-
[νώμε]νος ὁμοίως ἀνατραπή-
[σεται, εἰ] οὐκ ἔστ[ιν ὁ] κατὰ τὴ[ν]
ὁμ[οιότη]τα τρόπος ἀναγκασ-
[τικός]. τῷ γὰρ τὰ π[α]ρ’ ἡμῖν τὰς
ἐ[κφάσ]εις ποιούμε[να βρα]δεί-
ας ἢ κινεῖσθαι βρα[δέως ἢ μ]εγά-
[λα]ις κεχρῆσθαι χ[ώραις] <χρῆται σημείῳ>· [ἀ]λ-
λὰ τίς ἀνάγκη κα[ὶ τὸν] ἥλ[ιο]ν βρα-
δέως παρεξιόντ[α δι]ὰ τὰς αἰτί-
[ας] ταύτας τοῦτο π[άσ]χειν; ἐκποι-
εῖ γὰρ παρ’ ἄλλην ἰδί[αν] καὶ διαλλάτ-
τουσαν τῶν παρ’ ἡμ[ῖ]ν. οὐ γὰρ αὖ [σώ-]
[μ]ατα μὲν τὰ παρ’ [ἡ]μῖν τὰς χ[ρ]ό[α-]
[ς] τ[[ε]]ρανεῖς ἔχοντα [φ]αινομένας
[π]ά[ντα] δύναται λαμ[β]άνειν πα-
[ραλλαγ]ὴν ἐπὶ τὸ μ[εῖ]ζον ἢ τοὔ-
XI λαττον, ὁ δ’ ἥλιος οὐκ ἴσχει τὴν ἰδι-
ότ[η]τα τὴν τοιαύτην; οὐχὶ δὲ
κα[ὶ] τὰ παρ’ ἡμῖν ἐκφα[ι]νόμε-
να. παρὰ τὰς δύ’ αἰτίας δύ[να-]
ται τοῦτο πάσχειν, ὁ δ’ ἥλιος οὐ
διὰ ταύτας ἀλλὰ δι’ ἄλλην ἐξηλ-
λα[γ]μένην τῶν παρ’ ἡμῖν αὖ δυ-
να[τ]ήσει τὸ συνβαῖνο[ν] ἴσχε[ι]ν;
οὐδὲ τὸ τῶν λίθων μόνην
τὴν μαγν[ῆτι]ν ἕλκ[ει]ν τὸν σί-
δηρον ἐνδε[ίκνυ]ται τὴν ἡμετέ-
ραν σημείωσ[ιν] οὐκ ἀναγκαστι-
κήν. οὐχὶ δὲ [διὰ] τὴν ὑπὸ Διονυ-
σίου προενη[νε]γμένην ἀνά-

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25 τρόπος Ph. *R.M.* LXIV, 25. τρό[πος] G.
26 τὰ π[α]ρ’ Ph. *ibid.* τ[ὰ πα]ρ’ G.
27 ποιούμε[να] Ph. *ibid.* ποιούμ[ενα] G.
29–30 Ph. *R.M.* LXIV, 26.

analogy is not cogent.[26] For he uses the analogical inference that things in our experience which are slow to reappear either move slowly or are very large. Why is it necessary that the sun reappear slowly because of these particular causes? Its motion is the result of another cause which is unique and different from things in our experience. For is it not true that while all other bodies in our experience having bright
XI colors admit of change of degree, the sun does not have this characteristic? Is it not also the case that whereas objects which reappear slowly in our experience can do so through the two causes mentioned, the sun will be able to produce this effect through another cause different from the causes in our experience?

Nor does the fact that the magnet is the only stone which draws iron prove that our method of inference is not cogent.[27] Nor will it be overthrown through the refutation previously

[26] Philodemus claims that since the argument of the Stoics is analogical, it cannot be used to refute the Epicurean analogical method. Further, he holds that the nature of the sun cannot be determined analogically, for the sun is unique.

[27] Philodemus here makes a few general criticisms of Dionysius, prefatory to the systematic refutation of the Stoic arguments against analogy.

τρεψ[ιν ἀν]α[σκε]υ̣ασ[θήσ]εται· ο̣[ὐ]
τούτου γ' ἀ[π]ο̣ρο̣ῦ̣ν[τος, ἆ]ρ' οὐ[χ ὁ κα-]
τ' ἀ̣ναλ[ογίαν ἀναγ]κα̣[ῖος ἔσ]οιτ', [ὁ]
κατὰ τῆ̣[ν ὁ]μοιότη[τα] τρό[πος τῆς]
σημε[ιώσεως ἀνα]ι̣ρεθήσεται.
π̣ρὸς π[ᾶν γὰρ τὸ] τῆς ἀντιρρή[σεως]
[ὑ]περφυῶ̣ς ὡ̣[ς ἁ]ρμό[τ]τον, ὡς [καθ' ὁ-]
[μ]οιότητα μᾶ[λλ]ον ἢ κατὰ τὴν [ἀνα-]
[σκευ]ὴ̣ν <ἡ σημείωσίς ἐστιν>· ἡ δὲ μετάβασις ἀναγκασ-
[τικωτέρ]α δοκοῦ[σ'] εἶναι μηδὲ
τ[αύτῃ] ἀναγκά[ζε]ται τοῖς βεβαι-
ο[ῦσιν] τὸ [ἀναγκα]στικήν· καὶ
μ̣[ὴν τοὺς λόγους αὐ]τοῦ [γ' ε]ὐαπο-
λύτους εἶναι τοῖς ἐ[ρευν]ω-
[μ]ένοις συμβέ[β]η[κ]ε[ν. οἱ μὲ]ν
[γὰ]ρ πρῶτοι δύο τὴν [αὐ]τὴν δύ-
ναμιν ἔχοντε[ς ὡσαύ]τως δι-
ακόπτονται. τιθεμ̣[έ]νου γὰρ
τοῦτό τε ἀληθεύ[εσθα]ι, τὸ εἰ τὸ
πρῶτον τὸ δεύτε[ρο]ν, ὅταν ἀ-
ληθὲς ᾖ τὸ εἰ μὴ τ[ὸ δε]ύτερον
[οὐ]δὲ τὸ πρῶτον, ο[ὐ κα]τὰ τοῦτο
[συ]νάγεται τὸ μόνον εἶναι τὸν
[κατὰ τ]ὴν ἀνασκ̣ευὴν τρό-
XII πον ἀναγκαστικόν. τὸ γὰρ εἰ μὴ
τὸ δεύτερον οὐδὲ τὸ πρῶτον ἀ-
ληθὲς [γ]ίνεταί ποτε μὲν παρό-
σον τοῦ δευτέρου καθ' ὑπόθεσιν
ἀνασκευασθέντος παρ' αὐτὴν
τὴν ἀνασκευὴν αὐτοῦ καὶ τὸ πρῶ-

XI 15–17 Ph. *R.M.* LXIV, 26.
17 ἀ̣ναλ[ογίαν] D. ἀνα[σκευὴν] Ph. *R.M.* LXIV, 26.
20–28 Ph. *R.M.* LXIV, 26.
23 <ἡ σημείωσίς ἐστιν> Ph. *ep.*

XII 2 τὸ δεύτερον οὐδὲ τὸ πρῶτον Bahnsch, 9.
τὸ πρῶτον οὐδὲ τὸ δεύτερον OG.

brought forward by Dionysius. Not merely because he questions whether the method of analogy is cogent, will analogy be refuted as a method of inference. For to every part of his refutation it could be very fittingly said that the inference that he uses is according to the method of analogy rather than the method of contraposition. The method of inference which seems to be more cogent is not established in this way by those who confirm its cogency.[28]

It happens, indeed, that his arguments are easily dissolved by anyone who examines them closely. The first two have the same force and are refuted in the following way.[29] Granted that the proposition,

"If the first, then the second,"

is true whenever it is true that,

"If not the second, then not the first;"

it does not follow from this that only the method of contra-
XII position is cogent.[30] The proposition,

"If not the second, then not the first,"

sometimes is proved true when the second may be denied by hypothesis and from the mere denial of it the first is also

[28] Philodemus accuses Dionysius of using analogical arguments to defend contraposition.

[29] Philodemus now begins his refutation of the Stoic arguments given in the beginning of the work. The first two arguments, which he answers together, are not found in our text; they must have been presented in an earlier section which is now lost. Their purport must have been that analogy is not formally valid.

[30] Philodemus states that there are two kinds of inference: first, the purely formal inference tested by contraposition; second, analogical inference tested by inconceivability.

τον ἀναιρεῖται, καθάπερ [ἔ]χει
καὶ ἐπὶ τοῦ εἰ ἔστι κίνησ[ις] ἔστιν
κενόν· ἀναιρεθέντος γὰ[ρ] καθ' ὑ-
πόθεσιν τοῦ κενοῦ παρὰ ψιλὴν
τὴν ἀναίρεσιν [αὐτ]οῦ καὶ ἡ κί-
νησις ἀναιρεθή[σεθ'], ὥστ' εἰς τὸ
κατ' ἀνασκευὴ[ν γέν]ος ἐναρμότ-
τειν τὸ τοιοῦ[το· ποτὲ] δ' οὐχ οὕ-
τως ἀλλ[ὰ] π̣α[ρ' αὐτὸ τὸ μὴ] δύνασ-
[θα]ι τ[ὸ μ]ὲν [πρῶτον ὑπάρχ]ον <ν>ο-
[εῖν] ἢ τοιοῦτον [ὑπάρ]χον τὸ δὲ
[δεύ]τ[ερον] μὴ [ὑπάρ]χον ἢ μ[ὴ] το[ι-]
[οῦ]τον, ο[ἷον]· Π̣[λά]των ἐστὶν ἄν-
[θρωπος] καὶ Σω̣κ[ράτ]ης ἐστὶν ἄν-
[θρ]ωπ̣[ος]· τούτου γὰρ ἀληθοῦς
ὄν[τος ἀλη]θὲς [γ]ίνετα[ι] καὶ τὸ
εἰ Σω[κράτη]ς οὐκ ἔστιν ἄ[ν]θρωπος
οὐδὲ Π[λάτ]ων ἐσ[τὶν] ἄνθρωπος,
οὐχὶ [τ]ῷ̣ τ[ῇ] Σωκράτους ἀναιρέ-
σει συνανασκευ[άζε]σθ[αι τ]ὸν Πλά-
των[α], ἀλλὰ τῷ ἀ̣δια̣[νόη]τ[ον]
εἶναι τὸν μὲν Σω[κ]ράτη[ν εἶναι]
οὐκ ἄ[ν]θρω[πον εἶ]ν̣αι δὲ τ[ὸν Πλάτω-]
να ἄνθρωπον, [ὃ] δὴ τοῦ κ[αθ'] ὁμοι-
ότητ[α] ἔχεται τ[ρό]που. [δι]όπερ
οὔ[θ' ὁ π]ρῶ[τ]ος οὔθ' ὁ δεύτ[ερ]ο̣ς λ̣[ό-]
γος συνάγει τὸ τὸν καθ' [ὁ]μοιότη-
τα τρόπον τῆς σημει[ώ]σ[ε]ως
μὴ προσφέρεσθαι τὴ[ν] ἀ̣νάγ-
κην. οὐδ' ὁ τρίτος δὲ [τ]οῦτο
παρί[σ]τησιν, ἐπειδὴ κακῶς ἀ-
ξιο̣[ῖ] τὰ τῆς ὁμοιότητος εἰδι-
XIII κὰ μὴ ἔχειν τὸ ἀναγκαστικόν. οὐ
γὰρ ἀφ' ἧς ἔτυχεν κοινότητος

19 <εἰ> Π̣[λά]των Bahnsch, 9.

denied, as in the proposition,

"If there is motion, there is void."

For when void is denied by hypothesis, by the mere denial of it, motion will also be denied. Such an example, therefore, belongs to the class of contraposition. But sometimes the proposition is not proved in this way, but rather, when it is not possible to *conceive* that the first is or is of a certain character, and the second is not or is not of such character. For example,

"Plato is a man, and Socrates is a man." [31]

If this is true, it is true also that,

"If Socrates is not a man, neither is Plato a man,"

not because by the denial of Socrates Plato is denied along with him, but because it is *inconceivable* [32] for Socrates not to be a man and Plato to be a man. But this inference is derived from the method of analogy. Therefore, neither the first nor the second argument proves that the analogical method of inference is not cogent.

Nor does the third argument establish this, since Dionysius
XIII judges wrongly that the specific kinds of analogy are not valid.[33] For the inference ought not to be made from any chance

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[31] Bahnsch and Philippson would emend the text to read, "If Plato is a man, Socrates is also a man."

[32] ἀδιανόητον. On the empirical nature of inconceivability see xxi.27–29: ". . . an object deprived of all similarity with appearance is inconceivable." The Epicureans made extensive use of inconceivability as an empirical criterion (see below, 154, 166–167).

[33] The third Stoic argument (i^a) attempted to discredit the method of analogy by showing that some types of analogical argument are obviously invalid. The Epicurean answer is that analogical inference cannot be made from any chance similarity to any other chance similarity, for besides similarity there must be an absence of any evidence whatever to the contrary.

ἐφ' ἣν ἔτυχε κοινότητα μετ[α]βατέον ἐστίν, ἀλλ' ἀπὸ τῆς οὐδὲν εἰς τοὐναντίον αἴθυγμα παραδιδούσης οὐδ' ἐπισπασμὸν ἀντιπίπτοντα [το]ῖς ἐναργ[έ]σιν προσφερομένης. τί γὰρ ὅμο[ι]όν ἐστιν ἐκ τοῦ τοὺς παρ' ἡμῖν ἀποκεφαλιζομένο[υς] π̣άντας̣ τελευτᾶν καὶ μὴ φυ[ο]μένας ἴσχειν κεφαλὰς σημειο[ῦσ]θα̣ι̣ περὶ τοῦ καὶ τοὺς ὁπου[δήπο]τ' ἀνθρώπους ἀποκεφαλιζομένους ταῦτα πείσεσθαι, κἀκ [τοῦ] παρ̣' [ἡ]μῖν [ῥοι]ὰς ἢ συκᾶς εἶν̣[αι] κατα[ξιο]ῦν [τὸ πα]νταχο[ῦ ταύτ]ας ὑπάρ[χ]ε<ι>ν; [οἱ γὰρ ἄν]θρω[ποι ἀνα]γκ̣αίω̣ς [οἱ παρ' ἡ]μῖν [ἐοίκασι τ]οῖς ἐν ἀ[δήλοις, τὰ δὲ] φυ[τεύματ' ο]ὐδὲ κατὰ [τοὺς αὐτοὺς τόπους] ἀνθυπακ̣[ού][ειν φαίν]ετ', [ἀλλ' ἐκ ταὐ]τοῦ γένους ἀπ[αλλάττειν ὀσμα]ῖ̣ς καὶ χρόαις κα[ὶ σχή]μασι [καὶ] μεγέθεσι καὶ τοῖς [ἄλ]λοις̣ ἰδιώμασιν, ὥστ' οὐκ ἐνδείκνυτ[α]ι τὸν [κα]θ̣' ὁμοιότητα τρόπον οὐκ ἀναγκαστικ̣ὸν ὁ λόγ[ος, ἀ]λλ' εἰκ[τικ]ὸς καὶ ὑπὸ τῶν ἔργων ἐλεγχό[μ]ενος καὶ οὐδ' αὐτὴν τὴν ὁμ̣[οι]ότητα καὶ διαφορὰν τὴν ἐ[ν τ]οῖς φαινομένοις ἐπιλο[γ]ιζό[με]νος, εἰ μὴ ῥητέον· ἐπειδήπερ [ἰ]όνθους ὁρῶμεν ἐκθλειβομένο[υς] καὶ πάλιν ἄλλους ἐν τοῖς αὐ[τ]οῖς τόποις γεννωμένους, δισ[τ]ά̣σειν,

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XIII 18–23 Ph. *R.M.* LXIV, 27.

common quality to any other, but from that quality which does not admit a spark to the contrary or exhibit even a breath in opposition to appearances. How is it similar to infer that since all men beheaded in our experience die and do not grow new heads, men decapitated everywhere will have this characteristic, and to infer from the existence of pomegranates or figs in our experience that these exist everywhere? Though men in our experience are necessarily like men in unperceived places, plants even in the same regions do not appear to correspond; but those of the same genus differ in odor, color, form, size, and other characteristics. Therefore, his argument does not prove that the method of analogy is not valid, but is itself weak and refuted by the facts. Nor is his argument based on an inductive inference from the similarity and difference in appearances unless one could say:

"Since we see hairs plucked out and others growing back in

μή ποτε καὶ ὀφθαλμοὶ τοῦτο πάσχ[ου]σι, καὶ ἐπειδήπερ ὄνυ-

XIV χες ἀφαιρούμενοι πάλι φύο[ν]ται, μὴ καὶ κεφαλαί. καὶ μὴν ἀσύνακτός ἐστιν καὶ ὁ διὰ τοῦ κοινοῦ καὶ [ἰ]δίου σημείου συγκείμενος. οὐ γὰρ ἀναγκαῖον, ἐπεὶ τὸ κοινὸν σημεῖον καὶ ὄντος τοῦ ἀδήλου καὶ μὴ ὄντος ὑπάρχει, τὸ δ' ἴδιον [ὑ]πάρχοντος μὲ[ν ἔ]στιν, οὐκ ὄντ[ος] δ' οὐχ ὑπάρχει, διὰ τοῦτο πᾶν ἴδ[ι]ον σημεῖον εἶναι κατ' ἀνασκ[ευ]ήν· ἀλλ' ἐὰν μὲν παρ' αὐτὴν <τὴν> τἀφανοῦς ἄρσιν α<ἴ>ρηται τὸ ἐναργές, κατ' ἀνασκευὴν εἶναι τὴν σημείωσιν, ἐὰν δὲ μὴ παρὰ τοῦτο κ[α][τ' ἄλλο]ν δὲ τρόπον μὴ δ[ύν]η[ται τὸ] μὲν [ὑπ]άρχειν τὸ δὲ [μὴ] [ὑπάρχ]ει[ν, οἷ]ον ὅταν ἀδιανόητο[ν] [ᾖ τὸ μὲν ἐ]ναργ[ὲς] εἶναι ἢ τοιοῦτ' [εἶ][ναι τὸ δ' ἄδ]ηλον μὴ ὑπάρχειν, [οὐχὶ κατ'] ἀνασκευήν ἐστιν τ[ὸ τοι]ο[ῦτ' ἀλ]λὰ καθ' ὁμοιότητα, καθ' [ἣν οὐ δύ]ναται τὸ μὲν ἐνα[ρ]γὲς ὑπ[άρχει]ν νοεῖσθ' ἢ τοιοῦτο νοεῖσθαι τὸ [δ' ἄδ]ηλον μὴ ὑπάρχειν ἢ μὴ τοιο[ῦ]τον, ὥσπερ οὐ δύν[ατ]αι νοεῖσθ' Ἐπίκουρος μὲν ἄνθρω[πος] Μητρόδωρος δ' οὐκ ἄνθρωπ[ος]. [ἀ]σθενὴς δὲ καὶ ὁ διὰ τῶν μ[ο]ναχῶν συλλογισμός. οὐδε[ὶς] γὰρ ἡμῶν τὰ τοιαῦτ' ἀναιρεῖ [τῶν] ἰδιωμάτων, οὐδ' ὁ κατὰ τὴν ὁ[μοι-]

XIV 4 σημείου Ph. *R.M.* LXIV, 27 *om.* G.
11 <τὴν> Ph. *diss.*, 9.
20–21 [τοι]|ο[ῦτ'] Ph. *R.M.* LXIV, 5. [τ]|ο[ιοῦτ'] G.

the same places, we ask if eyes may not have this character, and
XIV since nails removed grow again, if heads might not do so." [34]

The argument based on the distinction between the common and particular sign is also inconclusive.[35] It is not necessary to suppose that since the common sign exists whether the unperceived object exists or not, whereas the particular sign exists only when the unperceived object exists, and does not exist when the unperceived object is non-existent, for this reason every particular sign is an instance of the method of contraposition. Rather, we should say that if by the very negation of the non-apparent the appearance is denied, the inference must be made according to contraposition. But if there is another method according to which it is impossible for the one to exist and the other not to exist,—as for example, whenever it is *inconceivable* that the appearance exists or is such as it is and the unperceived object does not exist,—such an argument is not by contraposition, but by analogy. According to analogy it is not possible that the appearance be conceived to exist or to be such as it is and the unperceived object not exist or be such as it is—just as it is impossible to conceive that Epicurus is a man and Metrodorus not a man.

The argument from unique cases is also weak.[36] No one of of our school denies such peculiarities, and yet the method of

[34] A *reductio ad absurdum* of the Stoic objection.

[35] To the Stoic argument based on the distinction between common and particular signs (I.1–19), Philodemus replies that a particular sign need not be tested by contraposition; it may equally well be tested by the analogical criterion of inconceivability.

[36] The answer to the Stoic argument from unique cases (I.19–II.25) follows. The Epicureans do not deny unique cases, but use them as bases of inference.

ότητα γίνεται τρόπος οὐκ ἀ[ναγ]καστικὸς ἕνεκα τοῦ λίθων ἓ[ν] γένος ἐπισπᾶσθαι τὸν σίδηρον· [κ]αὶ γὰρ ἥλιος εἷς ἐστιν ἐν τῷ κ[όσ]μῳ καὶ σελήνη καὶ πλῆθο[ς εὐστα]θῶν ὑπάρχον ἰδιοτήτων καθ' ἕκαστον γένος οἵαν τῶν ἄλλων οὐ[δὲ] ἓν <ἔχει>. εἰ μὲν οὖν ὁμοί-

XV *ω[ν ὄ]ντων τῶν ἄλλων λίθων μᾶ[λ]λον δὲ καὶ ἀπαραλλάκτων ὅσαι τὸν σίδ[η]ρον ἐπισπῶνται τινὲς μὲν [τοῦ]τ' ἐποίουν, τινὲς δ' οὐκ ἐποίουν, ἐσαλεύετ' ἂν ἡ κατὰ τὸ ὅμοιον μετάβασις. ἐπεὶ δὲ τοῦτο μὲν οὐ γίνεται, πολλῶν δ' ὄντων ἰδιωμάτων καὶ πολλή[ν] διαφορὰν προσφερομένων ἔστιν τις ἰδιότης καὶ τοιαύτη, πολὺ πρότερον καὶ φύσιν ἰδίαν τῆς λίθου προσφερομένης, κατ' οὐδὲ ἓν κινεῖται. [τ]ό τε μόνο[ν] τῶν τετ[ρ]αγώνων ἀ[ριθ]μῶν τὸν τέτ[τ]αρ' [ἐ]π<ὶ> τέττ[αρ]α τῷ ἐ[μ][βαδῷ τὴ]ν περίμετρον ἴση[ν ἔ][χειν οὐδὲν] ἐμποδ[ίζει] πρὸς [τὸ σημειοῦ]σθαί τινα διὰ τῆς [ὁμοιότητος]· αὐτοὶ γὰρ οἱ τετρά[γωνοι ἀριθμοὶ] πάντες ἐκ πείρας [βεβασανισμένοι] ταύτην αὐτή[ν τὴν διαφο]ρὰ[ν ἐ]ν αὐτοῖς ὑπά[ρχουσαν π]αρέδειξαν, ὥστε τὸν ἀν[αιροῦ]ντ' αὐτὴν μάχεσθαι τοῖς ἐ[ναργέ]σι. γελοῖον δ' ἐσ-*

36–37 [εὐστα]|θῶν Ph. *ep*. [ἄλ]|λων G.
38–39 οἵαν τῶν ἄλ|λων οὐ[δὲ] ἓν <ἔχει> Ph. *ep*.
XV 19–20 τετρά|[γωνοι] D. τετρά[γ]|[ωνοι] G.

analogy does not become invalid because one class of stones draws iron. There is only one sun and one moon in our world; and there are a number of constant peculiarities in every class of objects; nor does any one class have the same pecu-
XV liarities as the other classes. If other stones were similar to or identical with the stones that draw iron, and some drew iron, and some did not, the method of analogy would be destroyed. Since this does not happen, but since among the many different varieties of stones the magnet has a certain peculiarity of a specific kind, and it shows from the outset its particular nature, in no way is the method of analogy shaken.[37] And the fact that the square of four is the only square having its perimeter equal to its area does not hinder us from inferring by analogy; for all the square numbers tested by trial have shown that this distinction exists among them, so that one who denies it contradicts appearances.[38] It is ridiculous that

[37] The peculiar and distinctive nature of any class of objects, derived from empirical observation of similarities and differences, provides a basis of analogical inference.

[38] This passage seems to imply that mathematics may be reduced to an empirical science; see below, 147–148; Philippson, *De Philodemi Libro*, 37.

*τὶν ἐκ τῆς [ἐ]ναρ̣γ̣είας σημειού-
μενον πε[ρ]ὶ τῶν ἀδ[ή]λων [μά-]
[χε]σθαι τῇ [ἐ]ναργεία̣. παραδε-
[δ]ωκυίας [δ'] ἅπαξ αὐτῆς τετρ[ά-]
γωνον ἀ[ριθ]μὸν τοιοῦτον ὁ σ[η-]
μειούμενος ἐκ τῶν παρ' ἡμ[ῖν]
τοιούτω[ν] ἀριθμῶν καὶ πε[ρὶ]
τῶν ἐν τ[οῖ]ς ἀπείροις κόσμο[ις],
ὅτι καὶ πᾶς ὁ τέτταρ' ἐ[πὶ] τέ[ττ]α-
ρα τὴν περίμετρον ἴσην ἔχ[ει]
τῷ ἐμβαδῷ, καλῶς σημε[ιώ-]
σεται, κατα[κ]λείων εἰς ἀδιανό-
ητον [τὸ τοὺς] μὲν παρ' ἡμῖν τοι-
ούτους [εἶν]αι τοὺς δ' ἀλλαχῇ μὴ*

XVI *τοιο[ύ]τους. [οὐ] λέγεται δὲ ἃ [ἄ]ρτι λέγει
καὶ πρὸς τὸν ἀπὸ τῶν σπανίων, εἰ
καὶ δαψιλῆ συνεῦρεν̣ ψευδολογί-
αν. οὐ προσάγει μέντοι γ' οὐδ' ὁ
συνεχής. ὅταν γὰρ μεταβαίνω-
μεν ἀπὸ τοῦ [τ]οὺς παρ' ἡμῖν ἀν-
θρώπους θνητοὺς εἶναι καὶ ση-
μειώμεθα̣ περὶ τοῦ καὶ τοὺς ὁπου̣-
δήποτ' ἀνθρώπους θνητοὺς ὑ-
πάρχειν, οὔτε τοῦ̣το [προ]ϋφισ[τά-]
μεθα, τὸ καὶ κατὰ τὸ θνητοὺς
εἶναι τοὺς ἀνθρώπους ὑπὲρ ὧν
σημειούμε[θ'] ἐ[οι]κ[έν]αι τοῖς πα-
ρ' ἡμῖν, οὔτε τὸ κατ[ὰ πά]ντ' ἄλ-
λ' ἐοικέναι κατὰ δ[ὲ τὸ] θνητοὺς
[εἶναι δι]αφέρε[ιν], ἀλλὰ κοινῶ[ς ἐκ τ]ο̣ῦ̣ τού[ς]
[παρ' ἡμῖν ἀ]ν[θ]ρώ[πους πάντ]ας καὶ
κ[ατὰ τὸ θνητοὺς εἶναι πα]ραπλη-
σ[ίους ὑπάρχειν σημ]ειού-*

XVI 1 λέγ̣εται *fort.* λε<ί>πεται Ph. *ep.*

anything inferred from appearance about the unperceived should contradict appearance.[39] When appearance has once revealed a square number of this kind, one who infers from such numbers in our experience to those in the infinite universes will make a valid inference that every square of four has its perimeter equal to its area, on the ground that it is inconceivable for those in our experience to be of this nature

XVI and those elsewhere not of this nature.

Dionysius' argument in regard to rare cases is also inconclusive, especially if he has invented outright falsehoods.[40]

Nor does the argument next in order advance his case.[41] Whenever we infer from the proposition,

> "Men in our experience are mortal,"

to the proposition,

> "Men everywhere are mortal,"

we do not *presuppose* that the men about whom we infer are like those in our experience in respect to mortality, nor that they are like them in all other ways but are different in respect to mortality; but from the fact that all men in our experience

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[39] This statement suggests radical empiricism. It lies at the foundation of Epicurean methodology, and is used also by Sextus (e.g. *Adv. Math.* viii.269). See below, 138–139, 142–145.

[40] Philodemus hints that the rare cases mentioned by the Stoics (ii.3–15) may be inventions; cf. xxvi.9–12; xxxviii.8–11.

[41] Philodemus now answers the Stoic argument that valid inference must be analytic (ii.25–iv.37). When we infer, "If men in our experience are mortal, men everywhere are mortal," we do not presuppose that all men are mortal, but we determine empirically the mortality of all men in our experience, and extend our induction beyond our experience in the absence of evidence to the contrary. The uniformity of nature need not be presupposed. See Sextus *Adv. Math.* vii.278–279.

με[θα καὶ καθόλου τοὺς ἀνθρ̣]ώπου[ς] πάν[τας εἶναι θανάτου δ]εκτικούς, [μηδενὸς εἰς τοὐνα]ντίον ἀντι[πίπτοντος μη]δ' ἕω̣ς ἴχνο̣υς ἐπισπωμ[ένου π]ρὸ[ς τὸ] τελευτῆς αὐτοὺς [ἀ]δέκτου[ς] ε̣ἶ̣ν̣αι κατὰ τὴν ὁμο[ι]ότητα ταύτην [πα]ρ[α]καλούμενοι κα[ὶ κατ]ὰ τοῦ[τ' αὐ]τοὺς ὁ[μο]ίους ἀποφαίνε[σ]θ̣[α]ι τοῖς πα[ρ'] ἡμῖν. ἠγνοῆσθ[αι] δὲ συμβαίνει καὶ τὸν παρακ[εί]μενον. ὁ γὰρ μεταβαίνων [ἀ]πὸ τῶν παρ' ἡμῖν καὶ συλλο[γι]ζόμενος περὶ τῶν ὁπουδ[ή]ποτ̣ε̣ ἀνθρώπων, ὅτι εἰσὶν θν[η]τοί, τῷ καὶ τοὺς καθ' ἱστορίαν [γε]γονότας καὶ τοὺς ὑπὸ τὴν [πεῖ]ραν πε[π]τωκ̣ότας ἀνθρώπους πάντας ε[ἶναι] θνητούς, εἰς τού-

XVII ναντίον μηδενὸς ἀνθέλκοντος, κατὰ τὴν ὁμοιότητα σημε[ι]οῦται, καὶ τὸ [τ]οὺς παρ' ἡμῖν ἀνθρώπους ᾗ ἄ[ν]θρωποί εἰσιν εἶναι θνητούς, ὅπερ ἴσον ἐστὶ τῷ σὺν τούτῳ τοὺς ἀνθρώπους ἀνθρώπους ὑπ[ά]ρχειν, αὐτῷ τούτῳ διαβεβα[ι]οῦται. τ[ῷ] δὲ κατὰ τὴν ἀνασκε[υ]ὴν τρό[π]ῳ [τε καὶ] ὁδῷ φιλοσοφούντων οὐδε[ὶς] κατασκευάζει τὸ τοιοῦτον. καὶ οὐ διὰ τοῦτο τοὺς Ἀκροθ̣ωίτας ὀλιγοχρονίου[ς] εἶναι φ̣ήσομεν, [δι-]

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20 [καθόλου τοὺς] G. *apud* Ph. *R.M.* LXIV, 27.
24–25 G. *Mélanges Graux*, 52.
26–27 ταύτην | [πα]ρ[α]καλούμενοι D. ταύτην [π] | [α]ρ[α]καλούμενοι G.

are similar even in respect to mortality, we infer that all men universally are liable to death, since nothing opposes the inference or draws us a step toward the view that men do not admit of death. Appealing to this similarity we declare that in respect to mortality the men outside our experience are similar to those within our experience.

Moreover, Dionysius misunderstood the next argument also. When a person infers from men in our experience and concludes about men everywhere, that they are mortal—from the fact that men who lived in the past according to history [42] and men that have fallen under our observation are all mortal,
XVII with no case drawing us to the contrary—he makes his inference according to analogy. And the argument that men in our experience *as men* are mortal, which is equivalent to the statement that men with this characteristic are men, is confirmed by this same analogical method.[43] No philosopher who uses the method and procedure of contraposition provides such a confirmation. And we shall not say that the Acrothoites

[42] ἱστορίαν; cf. XX.38–39. The use of records of the past was recognized as an important element in ancient empirical method; cf. below, 128, 130.

[43] The Stoics argued that it is impossible to find empirically the nature of objects *as such*. Philodemus answers that if the empirical basis is broad enough the nature of men as men can be accurately determined (cf. XXXV.4–22). Experience gives us the limits of variation in objects; for example, length of life is a variable and cannot be exactly determined, but mortality is a constant which has no exceptions.

ἁ τὸ τοὺς παρ' ἡμῖν ὀλιγοχρον[ίου-]
[ς ὑπ]άρχειν. ο[ἱ] μὲν οἰ[κ]οῦντε̣[ς]
[αὐτὴν κατὰ] τὸ [γηράζει]ν τάχα̣
[πάντες οὐδ' α]ὐτοὶ [πα]ραπλη-
σ[ίως ἔχειν φαίν]ον[τ]αι̣· κ̣[αὶ] γὰρ οἱ
π[αρ' ἡμῖν ἄν]θρωπο[ι π]ολὺ διαλ-
λάτ[τοντες ὁρῶ]νται[ι κ]α̣τὰ πο-
λυχρ[ον]ιότ̣ητα καὶ̣ ὀ̣[λιγο]χρο-
νιότητα πα[ρὰ] χώρας κ[αὶ τό]που[ς],
ὥστ' ἀπαράδε[[ι]]κτον [οὐ]χὶ̣ τό
τινας ὑπερεκπείπτο[ντ]ας εἶ-
ναι μακροβιοτεία̣, καὶ ταῦτ<α> [[οὐ-
δὲ]] πολλῷ̣ παραλλάτ[τ]ουσα̣ν
ἡμῶν ἐχόντων ἐνίων ὡς οὐ-
δὲ τῶν 'Ακροθωιτῶν. οὐχ ὑγ[ιὴς]
δὲ λόγος ἐστὶν οὐδ' ὁ παρακε[ί-]
μενος. οὐ γὰρ οἶ<δ'> ἐπὶ τίνων <οὐχ> ἱκν[ού-]
μενός ἐστ[ι]ν ὁ κατὰ τὴν ὁμο[ι-]
ότητα τρόπος περιοδευόντ[ων]
ἡμῶν τῷ ἐπιλογισμῷ̣ δεό[ν-]
τω[ς τ]ὰς ὁμοιότητας, διὰ τοὐ-
κ ἀ[φ'] ὧν ἔτυχε κοινοτήτω[ν]
σημειωτέον περὶ ὧν ἔτυχε[ν].
εὐθ̣έ̣ως γὰρ [τ]ὰ παρ' ἡμῖν σώμα-
τα [ο]ὐχ ᾗ σώματ' ἐστὶν φθαρτά
XVIII ἐστιν ἀλλ' ᾗ φύσεως ἠναντιωμέ-
νης τῇ σωματικῇ καὶ εἰκτικῆς
μετείληφεν̣. ὁμοίως δὲ χρώμα-

XVII 14–15 ὀλιγοχρον[ίου] | [ς ὑπ]άρχειν D. ὀλιγοχρον[ίο] | υ̣ς̣ ὑ[π]άρχειν G.
15–18 Ph. *R.M.* LXIV, 27.
15 ο[ἱ] μὲν οἰ[κ]οῦντε[ς] *vel* ο[ἵ] γ' ἐνοι[κ]οῦντε[ς] Ph. *ibid.*, 28.
16 [αὐτὴν κατὰ] τὸ [γηράζει]ν τάχα̣ *vel* [ταύτης τῆς] π̣όλεως [κ]α̣τὰ γῆ | [ρας] Ph. *ibid.*, 28.
17–18 [πα]ραπλη | σ[ίως] D. [πα]ραπλ̣η̣[σί] | [ως] Ph. *ibid.*, 28.
25–26 [[οὐ | δὲ]] Bahnsch, 18.
26 παραλλάτ[τ]ουσα̣ν Ph. *R.M.* LXIV, 28. παραλλάτ[το]υ[[ο]]σαν G.
30 <οὐχ> Bahnsch 18.

are short-lived because men in our experience are short-lived. Perhaps those who dwell there do not all appear to be similar in respect to old age, for men in our experience are observed to differ much in longevity and brevity of life according to countries and places. Therefore it is not inadmissible that there are some people surpassing others in length of life. Furthermore, the length of life among us varies even more than among the Acrothoites.

Nor is the next argument a sound one. He does not know in what cases the analogical method is not appropriate, when we search out similarities by inductive inference in the proper way; for one ought not infer from any chance common qualities about any chance objects. The simple truth is that bodies in
XVIII our experience are destructible not as bodies, but in so far as they partake of a nature opposed to the corporeal and non-resistant.[44] Similarly, bodies in our experience have color,

[44] In answer to the Stoic objection that Epicurean atomism is not consistent with empirical method (IV.37–V.7), Philodemus replies that only the unvarying qualities of objects may be used as bases of empirical inference. For the Epicurean distinction between primary and secondary qualities, see below, 169–170.

τ' ἔχει τὰ παρ' ἡμῖν σώματα οὐχ ᾗ σώματ' ἐστίν· τὰ γὰρ ἁπτὰ καθὸ μὲν ἀντιτυπεῖ [τ]ὴν ἁφὴν σώματ' ἐστίν, καθὸ δ' ἁπτά ἐστιν οὐδεμίαν ἐμφαίνει χ[ρ]όαν· τὰ γοῦν ἐν τῷ σκ̣ότει χ[ρόα]ν μὲ[ν οὐ]κ ἔχει, σώματα δ' ἐστ[ίν]. ὅθε̣[ν ἀπ]ὸ μὲν τούτων οὐ σημε[ιο]ύμεθα περὶ τῶν πάντων σ[ω]μάτων, ἀπὸ δ' ἄλλων ὁμοιοτ̣[ήτ]ων οὐ κωλυθησόμε[θα] τῇ [κατὰ] τὸ ὅμοιον μ̣[εταβ]άσε[ι χ]ρώ[μενοι] δεόντω[ς] [σημειο]ῦσθ[αι οἷον ἀ]π̣' ἐλαφ[ρότητος καὶ βαρύτη]τος· ἀπὸ [δὲ τῶν μάλιστα συν]εγγιζόντ[ων καὶ ἀπὸ τῶν ὡς] ἔνι μάλ[[λ]]ισθ' ὁμ̣[οι]οτά[τω]ν με[ταβα]τέον, καὶ οὐ τ[αῖς] ἐπ̣[άν]ω χρησ[τέ]ον κοινότησ[ι, τ]ὰς [μά]λιστα [κατ]αλλήλ̣[ου]ς παρέντας· οἷον ἀπὸ [τ]ῶνδε [τ]ῶ̣ν κατὰ μέρο[ς] ἀνθρώπ[ω]ν ἐπὶ τ[οὺ]ς μάλιστα τούτοις ὁ[μ]ο̣ίους, ἀπὸ δὲ τοῦ γένους τῶ[ν] ἀ̣νθρώ[π]ων ἐπὶ τὸ γένος τούτων ὅπ[ερ] [τ]ῷ συνόλῳ γένει παρακο[λου]θ[ε]ῖ, μηδενὸς εἰς τοὐναντί[ον] μηδ' ἕως αἰθύγματος ἀ̣νθέ[λ]κοντος, ἀπὸ δὲ τῶν τοιῶνδ[ε] ζῴων ἐπὶ τὰ μάλιστα τούτ[ο]ις ἐοικότα, ἀπὸ δὲ τοῦ γένους ἐπὶ τὰ περὶ τὸ γένος, ἀπὸ δὲ τοῦ [τ]οιοῦδε σώματος ἐπὶ τὸ τοιόν[δ]ε, καὶ ἀπὸ τοῦ γενικοῦ ἐπὶ τὸ γενι[κ]όν, καὶ [ἀπ]ὸ τοῦ ὄντος τοῦ τοιοῦ-

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XVIII 16–18 Ph. *R.M.* LXIV, 28.

but not as bodies; for tangible objects in so far as they resist the touch are bodies, but in so far as they are tangible they reveal no color. Indeed, bodies in the dark have no color, yet still are bodies.[45] Therefore, from these qualities we do not infer concerning all bodies; but from other similarities, such as lightness and heaviness, we shall not be prevented from making inferences, provided that we use the method of analogy properly.

Inferences should be made from objects that are most closely related and from those that are as similar as possible; and one should not use broad similarities, disregarding those qualities which correspond more closely.[46] For example, the inference is best made from particular men to those especially similar to them, and from the class of men to the class of things which follows the whole class of men, nothing inclining us the slightest bit to the contrary; from animals of a certain species to those especially like them, and from a class to the classes close to it; and from a body of a certain kind to another of the same kind, and from the generic body to the generic;

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[45] Cf. Plutarch, *Adv. Col.* 7 (1110C); Lucretius II.746.

[46] The most certain inferences are those between the most similar objects. Thus inferences should be made between closely related species and genera. Cf. Philod. *Rhetoric* I.171 on metaphors.

[δ' ἐπὶ τ]ὰ μάλιστ' ἐοικότα, ἀπὸ

XIX δὲ τοῦ γενικοῦ καὶ πλείστοις ὄν-τος παρακολουθοῦντος, οὗ χω-ρὶς οὐδὲ νοῆσαι δυνάμεθα τὸ κοινῶς ὄν, ἐπὶ τὸ γενικόν. ἡμῖν μὲν οὖν δ[ι]αλεγόμενος ὁ Ζήνων καὶ λόγους τῶν ἀντιδοξαζόν-των τοὺς ἐκκειμένους προεφέ-ρετο καὶ το[ι]αύταις ἀπαντήσεσι πρὸς αὐτοὺς ἐχρῆτο· Βρόμιος δὲ τοιαῦτ' ἔφασκε πιστώματ' [αὐτ]ῶν καὶ συναντήματ' ἐκτίθεσθαι· πῶς ἀπὸ τῶν φαινομένων ἐπὶ τἀφανῆ μεταβή̣σῃ; πότερον τὰ φανερ[ὰ] π̣[άντ' ἐκ]περιελθὼν ἤ τινὰ τούτω[ν]; εἴτε γὰρ τὸ πρό-[τ]ερον, οὐ δυνατὸν̣ γενέσθαι τοῦ-[τ]ο̣· εἴτε τὸ δ[εύ]τερ[ον], οὐδεὶς μὴ [ποιῆται σ]υντρεχό[ντων] τινῶν [τὴ]ν [τῶν σημείων σ]ύντ[αξ]ιν· ἔπει-τ' [εἰ ἀέρω]ν εἰσὶν [παρ]αλλαγαὶ καὶ τ[ρ]ο̣[φῶ]ν καὶ σ[υστ]άσεων φυ-σικῶν πό̣θεν ο̣ὖ̣[ν οὐκ ἂ]ν εἴησ[α]ν παρὰ [τ]αῦ[τ]ά τινες καὶ ἀπλ̣ῶς καὶ τοιαύτας ἄλλας ἐπιφερ[ό-]μεναι̣ διαφοράς; ἤτοι γε ἀπ[ὸ] τῶν προσφερομένων φύσιν καὶ δύναμιν ἀπαράλλακτον ποιήσει τὴν μετάβασιν ἢ ἀπ[ὸ] τῶν οὐχ ὁμοίας ἐχόντω[ν]; τὸ μὲν ἐκ τῶν ἀπαραλλ[άκτ]ω[ν]

XIX 1–2 *pro* ὄν|τος *lege* οὖ|σι Ph. *ep.*
7–8 προεφέ|ρετο O. προεφέ|το G.
18–19 Ph. *R.M.* LXIV, 28.
23 [τ]αῦ[τ]ά *fort.* [τ]αύ[τ]α<ς> G.
28 ποιήσει *fort.* ποιήσῃ G.

from an entity of a certain nature to those especially like it,
XIX and from the generic entity, that which is a constant attribute of the greatest number of things, apart from which we are not able to conceive a common existence, to the generic.[47]

Zeno,[48] in his discussions with us, used to set forth the arguments of our opponents, and he made use of the answers that have been given. Bromius,[49] however, used to say that Zeno expounded the beliefs of our opponents and the answers to them in the following way:

"How will one infer from appearances to the non-apparent? Is it by including all appearances or only some of them? If the former, the task is impossible; if the latter, no one could make a synthesis of signs when only a limited number of cases concur.[50]

"If there are variations of atmosphere, food, and natural constitutions, why might there not be, besides, variations not related to our experience, which add other such differences? [51]

"Will one make an inference from objects that exhibit an identical nature and power, or from those that are not identical, but have only similar powers and natures? The view

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[47] In this passage Philodemus implies that inferences about atoms are tested by inconceivability.

[48] Zeno of Sidon, a famous Epicurean teacher; see pp. 2, 148–149. This sentence indicates that I^a–XIX.4 were based on the oral teaching of Zeno.

[49] Bromius is also mentioned in Philod. *Rhetoric* I.64.15. He was probably a contemporary of Philodemus, and may have been a close associate. Bromius is the source for the new series of Stoic arguments in XIX.12–XX.30, and his answers to these arguments are given in XX.31–XXVII.28. Zeno is again the ultimate source. Parts of this section repeat material already presented in I^a–XIX.4.

[50] The Stoics argue that complete enumeration is impossible and partial enumeration is inadequate. The Epicurean answer is given in XX.31–XXI.16.

[51] The Stoics insist that limits of variation cannot be established empirically. For Bromius' answer see XXI.16–XXII.2.

ὁρμᾶσθα[ι] τὸ σημειῶδες ο̣[ὐ]κ ἴ[σ]χει· μόνο[ν] γὰρ ἀριθμῷ διαλλάξει· τὸ δ' ἀπὸ τῶν μὴ τοιού[τ]ων μεταβαίνειν πιστὸν οὐκ ἔ[σ]τα[ι] διὰ τὴν προσοῦσαν παραλ[λ]αγήν. ἔτι [δ'] ἤτοι τὰ περὶ ὧ̣[ν ζητ]ε̣ῖς ἐνπεριλαβὼ[[με]]ν ἐρεῖς· ἐπεὶ πάντες εἰσὶν [ἄ]νθρωποι τοῖς παρ' ἡμῖν ὅμοιοι καὶ [κ]α̣θό εἰσιν θνη-

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τοί, θνητοὺς εἶναι δεῖ πάντας ἀνθρώπους· ἢ τοῦτο παραλείπων οὐ μὴ προβῇς κατὰ τὸν συλλογισμόν. εἴτε αὐτὸ τὸ ἄδηλον ἔχει τινὰς ἰδιότητας ὡς πρὸς τὸ φανερὸν ἐ[πι]βαλλόμενον, πῶς ὀρθῶς ση̣[μειώ]ση̣ τοῖς κατά τ̣ι διαλλ[άττο]υσιν τὰ παραπλήσια συ[νάπτ]ων συνπτώματα ; ἐξέ[θηκε δ]ὲ κα[ὶ τ]ὸν ἐκ τῆς μονογενεία[ς λόγον] καὶ τὸ παραφέροντά [τινα ἢ] κατ' ἄλλον τρόπον διαλλάτ[τοντ]α σαλ̣εύειν τὰς κατὰ τὴν [ὁμοι]ότητα σημειώσεις, ὧν ἐστ[ιν τ]ό τινας α[ἴ]γει[α] κ̣ρέα ῥ̣ᾷ̣[ον πέττε]ιν ἢ τ̣ὰ δοκοῦντα [πολὺ τούτ]ων εὐκατέ̣[ργασ]τ' εἶνα[ι μᾶλλον]· ὅθεν ο̣ὖ̣ν οὐχὶ [ταὐτὸν μ]όνο[ν φησ]ὶ τὰ πράγμ̣[αθ' ἡμῖν β]εβα̣[ιοῦν τῶν θ'] ὁμοίων κα[ὶ] [εἶναι παραλλαγ]άς· οὐχὶ κα[ὶ] [διαφέρει τοῦ] φανεροῦ τἀφ̣α̣νὲς κα̣ὶ π[αρακ]ρούειν ἡμᾶς ἔχ[ο]υ̣σι σθεν̣[αρῶς, ἐπει]δὴ τὰ παρ' ἡ-

XX 7 ση̣[μειώ]ση̣ Bahnsch, 19. ο̣ἰ[ή]ση̣ G.
15–18 G. *Mélanges Graux,* 51.
18–24 Ph. *R.M.* LXIV, 28.

that a sign-relation is based on identical things is untenable, for they will differ only in number; inference from objects not identical will not be trustworthy because of the differences present.[52]

"Again, either assuming the point about which you are inquiring, you will say:

> 'Since all men are similar to men in our experience even in
XX respect to mortality,
> 'All men must be mortal;'

or omitting this assumption, you will not proceed according to the rules of the syllogism.[53]

"And if the unperceived itself has certain peculiarities as compared with the apparent object, how can you rightly make an inference by associating similar accidental qualities with those which differ in some respect?" [54]

Next Bromius presented the argument from unique cases and the argument that variations and differences weaken inferences by analogy. For example, from the fact that some people digest goats' flesh more easily than other food which seems to be more digestible, our opponent says that objects have no fixed or consistent nature for us, and that there are differences even among similar objects.[55]

"Is not the unperceived different from the apparent, and cannot the Stoics violently attack us on the ground that al-

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[52] This Stoic argument that neither identity nor partial similarity provides a suitable basis for analogy is answered in XXII.2–28.

[53] Here the Stoic argument is that inferences must be analytic to be valid. Bromius' answer is given in XXII.28–XXIII.7.

[54] This Stoic argument concerning the peculiarities of the unperceived is very close to the argument on unique cases and the indefinite extent of variations. The Epicurean answer is in XXIII.7–XXIV.10.

[55] The argument from unique cases, given previously in I.19–II.25, is answered by Bromius in XXIV.10–XXV.23. The argument from variation is answered in XXV.24–XXVII.9.

μῖν ζῷα πα[ραφυλάτ]τοντες εἶναι φθαρτὰ τ[οὺς θ]εοὺς ἀφθάρτους ὑπάρχειν λέ[γο]μεν, καὶ πά[ντων] γενητῶν κα[ὶ φθ]αρτῶν ὄ[ν]τω[ν] τὰς τῶν ὅλω[ν ἀ]ρχὰς ἀγ[ε]νή[τους] εἶναι καὶ ἀφθ[άρ]τους ἀ[ξιο]ῦ[μεν]; ὧν πρὸς μὲν [τ]ὸ πρῶτον ἐροῦμεν, φησίν, ὡ[ς] οὔτε πά[ν]τα ἀναγκαῖά ἐστι[ν ἐ]κπεριε[λ]θεῖν τὰ φαινόμενα [παρ' ἡ]μῖν οὔ[τ]ε μὴν οἷς ἔτυχεν ἐντ[υχ]εῖν, ἀλ[λὰ] πολλοῖς ὁμογενέσι καὶ ποικίλοις, ὥστ' ἐκ τῆς τούτοις περιπτώσεως καὶ τῆς ὑπὲρ τῶν αὐτῶν ἱστορίας τὸ συνεδρεῦον ἀχωρίστως

XXI *ἑκάστῳ τῶν κατὰ μέρος λαβόντας, ἀπὸ τούτων μεταβαίνειν ἐπὶ τἆλλα πάντα. εἰ γὰρ καὶ τἆλλα μὲν διαφέροντες ὅμοιον εἰπεῖν ἄνθρω[π]οι πρὸς ἀλλήλους εὑρίσκονται, κατὰ δὲ τοῦτο δι[α]φορὰν οὐκ ἔχοντες [τ]εθεώρηνται, ἆρά γ' ἐφ' οἷς ἐνεκ[υ]ρήσαμεν καὶ ὑπὲρ ὧν ἱστορήσαμεν πῶς οὐ φήσομ[ε]ν θαρροῦντες ἅπαντας εἶναι γήρως καὶ νόσου δεκτικούς; το[ῦτ]ο [δ'] ὅταν ληφθῇ καὶ πρὸς τοὐ[ν]α[ντ]ίον μ[η]δὲν ἀντιπίπτῃ, [ψευδ]ολογεῖν φήσομεν τοὺς λέγο[ντα]ς· ἄνθρ[ω]ποί τ' ἄτρω[το]ι ἔ[φυ]ν π[ρίν· π]ρὸς δὲ τὸ δεύτε[ρον] [ἐρ]οῦμε[ν τὴ]ν μετάβασιν [οὐδὲ] [ταῖσ]δε κιν[εῖσθ'] ἂν ταῖς συστ[άσε-]*

30–31 ἀ[ξιο]ῦ[μεν]; | ὧν Ph. *R.M.* LXIV, 29. ἀ[ξιο]ῦ[μεν; Ζήν] | ων (?) G.

XXI 15–23 Ph. *R.M.* LXIV, 29.

though we observe living beings in our experience to be destructible, we say that the gods are indestructible; and although all things are created and destructible, we judge that the elements of all things are uncreated and indestructible?"[56]

To the first of these arguments our answer (according to Bromius) is that it is not necessary to include all appearances in our experience, and we should not rely merely on chance appearances. We must consider many homogeneous and varied ones, so that from our experience of them and from the
XXI accounts of history concerning them we may take the inseparable constituent of each of them individually, and from these we may infer to all the others. For example, if men are found to differ in all other respects, but in one respect they have been observed to have no difference, why shall we not say confidently on the basis of the men that we have ourselves met with and those of whom we have historical knowledge, that all men are liable to old age and disease? When this has been established and there is no conflicting evidence, we shall say that they state a falsehood who say:

> "Men were formerly invulnerable."[57]

To the second argument we shall say that the inference

[56] The argument that Epicurean metaphysics is inconsistent with empirical method was given above, IV.37–V.7. It is answered in XXVII.10–28.

[57] In answer to the first Stoic argument of XIX the Epicureans maintain that induction does not require exhaustive enumeration, so long as representative cases are considered, both from our own experience and from records of the past, and there is no evidence to the contrary.

[σιν, ἀλλὰ] τοια[ύτα]ις κεχρημέ[νην] [εἰς ἴ]χνος [τοῦ ἀδή]λ̣ου καταξιο[ῦν] τ[ὰ θε]ωρητά, [ἅτ]τ̣' οὖν ἡ̣μᾶς πρῶ[τα πρ]ὸς τοῦτο̣ προκέκληται. πευσόμεθα δ', [εἰ] χρ<ή>, ὑπὸ τίνος κινηθέντα κα[ὶ ἀπὸ] τίνος ὁρμηθέντα δ[ι]απορε̣[ῖ]ν περὶ οὐδήποτε ἢ τὴν ἐπιζήτησιν ἀέρ[ι]ον ποιεῖσθαι, χωρὶς [το]ῦ τὸ πάσης κ[ο]ινότητος ἐστερημέ[ν]ον [τῆς πρ]ὸς τὸ φαινόμεν̣[ον] ἀδιαν[όητον εἶ]ναι. καὶ περὶ αὐτῶν δ' ἀέ[ρ]ων καὶ παραλλαγῆς φύσεων [τ]ὸ̣ν αὐτὸν ποιησόμε[θ]α λόγον, [ο]ὐ̣κ̣ ἐπίπασαν ἐκβάλλ[ο]ντες π̣αραλλαγήν, καὶ ταῦτα μή τις [ἀπ]αντήσῃ καὶ ταύτῃ δύσκολον, ὥστε διστάσαι, μή ποτε παρὰ̣ [τ]ὰς τοιαύτας διαφοράς εἰσιν [ἄν]θρωποι [σι]δήρου φύσιν ἔ[χο]ντες καὶ διὰ τοί-

XXII [χ]ων πορευόμενοι καθάπερ ἡμεῖς [δ]ι' ἀέρος. πρὸς δὲ τὸ τρίτον, ὅτι πο[τὲ] μὲν καὶ ἀπὸ τῶν ἀπαραλλά[κ]των μεταβησόμεθ', ὅταν ᾖ τι δισταζόμενον τῶν περὶ [αὐ]τὰ συμβαιν[όν]των, τῷ̣ δὲ τὸ [μὲν ἐ]ξ ἐναργείας καταλαμβάν[εσ]θαι τὸ δὲ μὴ πρόδηλον εἶναι [χρ]ησόμεθα σημείῳ̣ τῷ̣ βλεπομέ[ν]ῳ̣ πρὸς τὴν παραδοχὴν τοῦ φα[ινο]μένου, ποτὲ δὲ [ἀπὸ τ]ῶν οὐκ [ἀπ]αραλ-

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21 ὑμᾶς O.

23 ὑπὸ τίνος G. ὑπό τινος Ph.

24 [ἀπὸ] τίνος G. [ἀπό] τινος Ph.

32 [ο]ὐ̣κ ἐπίπα|σα[ν] D. [ο]ὐ̣κ ἐπὶ πᾶ|σα[ν] Ph. *R.M.* LXIV, 29.

would not be shaken by differences of constitutions, but that by using them for the investigation of the unperceived we confirm the apparent variations which first called our attention to this problem. And we shall ask, if need be, on what ground and from what starting-point a person raises an objection to anything whatsoever, or considers an investigation futile, if not from the principle that an object deprived of all similarity with appearance is inconceivable.[58] Concerning atmosphere and differences of nature we shall make the same argument, not rejecting all difference. Let no one oppose us or be so stubborn as to question whether there are, beyond such dif-
XXII ferences, men with a nature of iron, who go through walls as we go through air.

To the third argument Bromius answers that sometimes we shall infer from identical objects, whenever there is a distinction in accompanying circumstances. When one object is apprehended from appearance and another is not apparent, we shall use the sign which is confirmed by the apparent. And sometimes we shall infer from non-identical objects, in so

[58] To the argument on indefinite variations Bromius answers that empirical inference utilizes the variations it finds within experience. But the variations beyond our experience are not unlimited, for an object completely unlike the objects in our experience would be inconceivable. Here inconceivability is clearly regarded as an empirical criterion.

λάκτων, ἐ[φὸ καὶ] καθὸ μ[ετ]έχει τῆς αὐτ[ῆς γε κο]ινότη[το]ς τῶν ὁμοίων [περὶ αὐτ]ạ̀ συμπτωμάτων, οἷον ὅτ[ι τινὰ] μὲν ἀνθρώποις μ[όνοις ἴδια], τινὰ δὲ [κοινὰ] κα[ὶ] θẹ[οῖς ἐστ]ιν· εὐστόχω[ς οὖν τ]ῇ ἐ[κ] ζῴ[ων μετ]ạβάσει χ[ρησόμεθα] ν[ομίζοντες] οὐδὲν [κωλύειν], [μὴ σῶμα μ]ὲν ἀνθ[ρώποις ὡμοι-]ω[μένον] τὸν θεὸν ὑπ[ά]ρχ[ειν] δ[ιὰ τὸ τὸν ἄ]νθρωπον φρọν[ή-]σε[ως μόνον τῶν] παρ' ἡμῖν ζῴων δε[κτικόν, φρο]νήσεως δὲ χωρὶς μ[ὴ νοεῖσθ', ἀλλ]ạ̀ μὴ γεννᾶσθαι σ̣υνεσ[τηκένα]ι̣ δ' ἐκ ψυχῆς καὶ σώμα[τος τὸν θεὸν κα]ὶ ζῷον σὺν τούτῳ [ἀναγκ]α[ίως εἶναι]. πρὸς δὲ τὸ [τέταρτο]ν [ὡς οὔτε χρ]ὴ πε-ρ̣[ι]λαβ[εῖν] τὸ μὴ [πρόδηλ]ον, ὥσ-τ' εἰπεῖν· ἐπεὶ κα[ὶ κ]ατὰ τὸ εἶναι θνητοὶ οἱ [ἐ]ν οἱσδ̣ήποτε τόποις ὄντες ἄνθρωπ[οι] τοῖς παρ' ἡμῖν εἰσιν ὅμ[οι]οι, δε[ῖ π]άντας εἶναι θνητού[ς· ο]ὔτε μὴν τοὐναν-τίον τῷ προκειμένῳ προλή-ψοµ̣αι, καταντήσω δὲ διὰ τοῦ τῶν̣ φαινομένων ἐπιλογισ-μο[ῦ ἐπὶ] τὸ καὶ κατὰ <το>ῦτο δεῖν τὴν

XXIII

ὁμοιότητα ὑπάρχειν. ἐπεὶ γὰρ τοῖς παρ' ἡμῖν ἀνθρώποις τοῦτο [π]αρέ-πεται τὸ σύμπτωμα, πάντως ἀξιώσω πᾶσιν ἀνθρώποις τοῦ-το παρακολουθεῖν, ἐπιλογισμῷ συνβιβάζων, ὅτι καὶ κατὰ τοῦτο

XXII 12–28 Ph. *R.M.* LXIV, 29–30.

far as they share the same community of similar attributes, as for example, that some attributes are peculiar to men alone, and some are common also to the gods.[59] Thus we shall use successfully the inference from living beings, when we consider that nothing prevents god from being similar in body to man since man alone of living beings in our experience is capable of thought. For god cannot be conceived apart from thought; and even though god was not born, yet he is composed of soul and body and with this nature he is necessarily a living creature.[60]

To the fourth argument we answer that we do not need to presuppose the conclusion in our premiss, so as to say:

> "Since men, in whatever places they are, are similar to men in our experience even in being mortal,
>
> "All men must be mortal."

Nor shall I anticipate the opposite of this statement; but by inductive inference from appearances I shall arrive at the
XXIII view that similarity must exist in respect to mortality.[61] For since this attribute is common to all men in our experience, I shall judge in every case that it is an attribute of all men

[59] Bromius' answer to the question of the amount of similarity required for valid inference differs from Zeno's (XVIII.17–XIX.4). Bromius says that identity is used for inference between objects when one is apparent and one unperceived; while similarity is used in the case of objects similar in genus but different in species, e.g. men and gods. See below, 170–171.

[60] On the application of empirical method to the problem of the nature of the gods, see XXVII.10–23 and Cic. *De Nat. Deor.* I.43, 46–49; cf. below, 155. Plato (*Phaedrus* 246) also says that God has both soul and body, but he does not carry the analogy with men so far as the Epicureans do.

[61] That is, we should not include *a priori* the unperceived in our premiss, nor should we exclude it *a priori*.

δεῖ τὴν ὁμοιότητ' εἶναι. πρὸς δὲ τ[ἀκ]όλουθον, ὅτι καὶ ᾗ διαφέρει [τ]ὰ ταῖς αἰσθήσεσιν ἄδηλα καλῶς [ὁ] σημ[ει]ούμενος τὴν παραλ[λαγ]ὴν αὐτοῖς ἀποδώσει καὶ ᾗ τ[ὰς κο]ινότητας ἔχει πρὸς [τ]ὰ φα[νερὰ τ]ούτων οὐ στερήσει [ὃν] [τρόπον] δυναί[μην] ἂν ἀπὸ τῶν [παρ' ἡ]μῖν μεταβ[αί]νων πυρῶν [πρὸς τὸ] καὶ ἐν ο[ἱσδήπο]τ' ἄλλ[οις] [τόποις πῦ]ρ δι[ι]σχ[υρίζεσ]θαι πε[ρὶ] [τοῦ καθ]όλου εἶν[αι, ὥσπερ] [τῷ πυ]ρί, καθ[ὸ] πῦρ [ἐστιν], ἀφθῆ[ναι] [δι' αὐ]χμὸν ἢ συρ[ρήξει ἢ] ἀσ[τραπαῖ]ς τὰς καυτι[κὰς ὕ]λας· [δεκτικὰς δὲ] τῶν ἑτέρ[ων] καυ[τικῶν εἶναί τ]ινας διὰ [τὰ] πράγ[ματα κα]ὶ [α]ὐτὰ τ[ὰ] φαινόμε[να τούτου τοῦ π]αραλλάγματος ἐμ[ποδίζει ἡ] π[ροτ]αχθεῖσ' ἰδιότ[ης· τάς τ' οὐ]σίας τῶν πυρῶν, κ[αὶ τοῖς παρ' ἡ]μῖ[ν φαι]νομένοις κ[εχρημένος] κ[ατὰ τοὺ]ς χρόν[ους], ὑπὸ [διαφόρων] ἂν ε[ἴπο]ις δυνάμεων [πολυχ]ρον[ί]ους ἢ ὀλιγοχρονίο[υς γι]νο[μένα]ς καὶ δ[ιαλ]λαττο[ύσας· ο]ὐχ ἁπάσ[ας] τε τὰς αὐτὰς οὐσία[ς ὁ]μ[οίως] ὑπὸ τῶν κατὰ μέρος κ[άεσθαι, κ]α[ὶ] πυρῶν τὰ μὲν [εὐαπόσβεσ]τ' εἶναι τὰ δ' οὔ· καὶ πρὸ[ς σκλ]ηροῦ μ[ε]ταβολὴν καὶ χρ[όνων] παραλ[λ]αγὰς προσφέρε[ται] τὰ πυρὰ [κα-]

XXIII 13–36 Ph. *R.M.* LXIV, 30–31.
38 χρ[όνων] Ph. *ibid.* χρ[όας] G.

everywhere, and confirm by induction that in this respect also there must be similarity.

To the next argument we answer that in so far as the things which are not apparent to the senses are different, he who infers well will attribute this difference to them, and in so far as they have qualities in common with appearances, he will not deprive them of these. According to this method I would be able, inferring from fires in our experience to fire in any other place whatever, to establish with certainty the universal nature of fire.[62] For example, it is a property of fire, in so far as it is fire, that combustible materials are kindled by drought or friction or lightning; and this peculiarity, which is confirmed by objects and by the appearance of this variation, prevents fuels from admitting of other forms of combustion. Moreover, on the basis of appearances in our experience one would say that the fuels of fires have different powers in respect to the length of time they burn, for some are of long and some of short duration. And the same fuels do not burn all in the same way in particular cases. Some fires are easily quenched, while others are not. Fires also exhibit differences

[62] Using fire as an example, Bromius shows how empirical method can establish a limit to variations and determine the essential qualities underlying the manifold of appearances.

XXIV

[τὰ] τὰς διαφόρους ὕλας· ὅθεν καθ' ἃ [μὲ]ν ἰδ[ι]ώματα τὰς πα[ρ]αλλαγὰς καταλείψει τῶν φαινομένων ὁ προσήκοντα ποιούμενος ἐπιλογισμόν, κ[α]θ' ἃ δὲ τὰς πρὸς τὸ φαινόμενον διαφυλάξει κοινότητας, ὧν ἄτερ οὐδὲ νοηθῆναι πυρὸς ἔχοντα φύσιν ἐστὶ δυνατόν. ὁ δ' αὐτὸς καὶ περὶ τῶν ἄλλων πραγμάτων ἐστὶ λόγος. πρὸς δὲ [τ]ὸ πε[ρὶ τ]ῶν μοναχῶν, ὅτι ὁ[[υ]] καλῶς σημειο[ύ]μενο[ς κ]αὶ τὰς κοινότ[η]τας καὶ τὰς ἰδι[ότη]τας ὀρθῶς κατανενοηκὼς [καὶ] ταῖς οὐσίαις καὶ ταῖς δυνάμε[σ]ι καὶ ποιότησι καὶ συμπτώμασ[ι κ]αὶ διαθ[έσ]εσι καὶ πλήθ[εσι] καὶ ἀριθμοῖς δεο[ύσ]η χρήσ[ε]ται μεταβάσε[ι], καὶ ἐφ' ὧ[ν μὲν] π[ο]λλὰς ἐν τοῖς ὁμοειδ[έσι]ν δι[αφο]ρὰ[ς] καταλε[ί]ψει τα[ῖς τε] π[αρ' ἡμῖν] πρὸς ἀλλήλας [ἀναλόγο]υ[ς, ἐφ' ὧ]ν δ' ὀλίγα[ς] πάντω[ς οὔσ]α[ς· τοῦτόν] τε τρόπον μετα[βαίν]ων <ἀξιώσει> τοὺς ὁπουδ[ήποτ' ἀν]θ[ρώπου]ς τρω[τ]οὺς εἶναι καὶ τὸ ἰδίωμ' ἔχοντας τόδε ἢ διαφορὰς ἄλλας ταῖ[ς] ἐφ' ἡμῖν ἀναλόγους, καὶ οὐκ ἔ[σται] τοιαύτη τις ἰδιότης, ὥ[σ]τε [π]ω[ς] δυνατὸ[ν φαίν]εται κα[ὶ] ἄν[θ]ρω[[σ]]π[ό]ν τινα μὴ εἶναι τρωτόν, καὶ πεπερα[σμέ]νον τι μὴ παρ' ἕτερον θεώμεθα· καὶ παρὰ γὰρ αὐ[τοῦ]

XXIV 18–39 Ph. *R.M.* LXIV, 31–32.

32–35 αὐ[τοῦ]|τ[ο]ῦ . . . λόγος D. αὐ|[τ]ὸ τὸ [θεωρ]εῖσ[θ' ἐ]πὶ πάν[τ]ων ταὐ|[τὸ]ν τὸ μὴ [ἀντ]έχει[ν τ]ι τῶν φαι|νομένων [εὐ]λόγ[ως] Ph. *R.M.*, LXIV, 31–32.

XXIV in change of brightness and duration, according to the different fuels.[63] Therefore, on the one hand, one who makes a correct induction will dismiss the differences of appearances in so far as they are peculiarities; and on the other hand he will retain the common qualities of appearances, without which it is not possible to conceive that anything has the nature of fire. The same argument holds in the case of other things.

In answer to the argument about unique cases we say that one who infers well has noted rightly both the common qualities and the peculiarities, and he will use substances, powers, qualities, attributes, dispositions, quantities, and numbers as the inference requires. In some cases he will dismiss many differences in things homogeneous, when the differences correspond to the differences within our experience, and in some cases he will dismiss very few. Inferring in this way he will judge that men everywhere are vulnerable and have this peculiarity along with other differences analogous to the variations in our experience.[64] There will not, however, be a peculiarity of such a kind, that it will appear possible in any way that a man be invulnerable or that we see any finite object not bounded by another object. For from the very fact that in

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[63] On the different kinds of fire, see Sextus *Adv. Math.* VIII.192.

[64] Bromius' answer to the argument from unique cases is much like Zeno's; see above, XIV.28–XVI.4.

τ[ο]ῦ το[ύτ]ο̣ις [ἐ]πὶ πάν[τ]ων ταὐ[τὰ] τάδε σ̣υ̣ν̣τρέχει[ν] ὁ τῶ̣ν̣ φαινομένω̣ν λόγος [ἔδ]ωκε τὴν δια̣βεβ[αίωσι]ν. καὶ ο̣[ὐ] σοφὸς μέν τις δύνατ' εἶναι τῶ[ν θη]ρ̣ῶν ἀφρόνων ὄντων, [σὺν δὲ τ]ούτω̣ [λέγ]ετα̣[ί τι]ς ἄνθρω[πος σὺν] τῷ

XXV *φθαρτὸς εἶναι καθάπερ ἀριθμὸς σὺν τῷ ἐκ̣ μονάδων συνεστηκέναι. καθόλου τε καὶ ψυχὴ πρᾶγμά τ<ί> ἐστιν ἴδιον οἷον ἄλλ' οὐδέν, καὶ χρόνος οἷον οὐδέν ἐστιν· ἆρ' οὖν καὶ τούτοις τις χρήσεται πρὸς τὸ μὴ δεῖν ἀπὸ τῶν ὁμοίων ποιεῖσθαι τὴν μετάβασιν σημε̣ιουμένους περὶ τῶν ἀδήλων ὁμοιότητα δὲ πρ̣ὸ̣ς̣ τὰ [π]αρ' ἡμῖν κεκτημένων; ο̣ὐ μ̣[ὴν ἀλλὰ] τὰ παρ' ἡμῖν ποικίλμ[αθ' ὁρ]ῶ̣ν̣ [κα]τ̣αξιώσει τις κἂν το[ῖς] ἀ[δήλοις ὑ]πάρχειν, ἐφ' ὧν μὲ̣ν̣ κα[τὰ κοινό]τητας ἐφ' ὧ[ν δὲ] κ̣ατ' ἰ[δι]ο̣τητας̣, ὥσπερ τῶ̣[ν ὀφθαλμ]ῶ̣ν̣ [οὐ πά]λ̣ι̣ν̣ ἀ̣ν̣α̣φύντ[ων τοὺς ἰόνθους πάν]τως πάλιν γ[εννᾶσθαι· τ]ἀπ[αρά]λλακτον ο̣[ὖν ἢ θὅμοιο]ν̣ ε[ἰλη]φότες οἰκείαι̣ς̣ χρ̣[ώμεθ]α τ[αῖς] μεταβάσεσιν ἀπὸ τ[ῶν] ὁμο[ίων] καὶ ἀναλόγων ἰδι[ότη]σι καὶ κοι̣ν̣ότησι τὰς μεταβάσεις ποιούμενοι. καὶ τἀκόλουθον δὲ πα[ρασ]τησόμεθα λέγοντες ὅτι τοὺ[ς κ]ακῶς*

XXV 4 τ<ί> ἐστιν A. Nauck *apud* G. *Zeitschr.* 705.
11–12 Ph. *R.M.* LXIV, 32.
16–20 Ph. *ibid.*

all cases the same qualities are joined to these objects, the study of appearances has given confirmation to our argument. Likewise, no beast could be wise, since beasts are without
XXV reason. Further, man is called man with the quality of being destructible, just as number is number with the quality of being composed of units. In general the soul is a peculiar thing different from every other object, and time also is like nothing else. Will anyone then make use of these unique objects in order to argue that when we infer about unperceived objects we should not base our inference on similarities, even though the unperceived objects possess an analogy with objects in our experience? [65] Indeed someone seeing the manifold variety of our experience will judge that this exists also among unperceived objects, both in regard to common qualities and also in regard to peculiarities, e.g., that eyes do not grow again, but hair always grows again. Taking the identical, then, or the similar we make the appropriate inferences from similar and analogous cases by means of peculiar and common qualities.

We shall dispose of the next argument by saying that those

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[65] It would be incorrect to hold that such unique entities as soul and time invalidate inductive inference. See Sextus *Adv. Math.* x.219 for the Epicurean definition of time.

σημειουμένους εὐθύνε[ιν φρο]υδοποεῖτα[ι] τὸ ἐπὶ μέρους ἐ[ν]υπαρκ[τ]ικὸν ὂν σὺν τῷ τοὺς ἀποφ[αι]ν[ο]μένους περὶ ὡνδήποτ' ἐνίοτ[ε] μὲν περὶ τοῦ καθολικοῦ διισχ[υ]ρίζεσθαι, ποτὲ δὲ χρῆσθαι τῷ ὡ[ς] ἐπὶ τὸ πολύ, καὶ τούτων αὐτῶν ἐκ τῶν φαινομέν̣ων κατωπτευμένων. ὅτι γὰ̣[ρ] αὖ πολὺ τὸ πρός τί ἐστιν ἔν τ[ισι]ν, ἐπ' ἐνίων δ' εἰσὶ κοινότητες ἀκίνητοι, τὰ φαινόμενα παρέσ̣τησε, καθάπερ τινὰ̣ τῶν θανασίμων καὶ καθαρ[τ]ικ[ῶν καὶ] τὰς [ἄ]λλας

XXVI ἐχόντων δυνάμεις. θαυμαστὸν δ' οὐδὲν εἰ τῶν τροφῶν πολλῆς καὶ ποικίλης οὔσης διαφορᾶς καὶ τῶν τρεφομένων τὸ τοιοῦτ' ἰδίωμα δύνατ' εἶναι περ[ὶ] ἄνθρωπον, οὐδ' ἕνεκεν τούτου προσδεξόμεθ' ὅτι κά[ρφην ἄ]νθρωποι σιτούμενοι τρέ[φ]ονταί τ[ε κα]ὶ ῥ̣αδίως πέττουσιν. ἔνια δὲ καὶ πλάττεται πρὸς τὴν δόξαν [φ]ορῶς καὶ παραλαμβάνεται τῶν ψευδῶς ἱστορουμένων, χωρὶς τοῦ μηδὲν περαίνεσθαι <διὰ> τῆς προσθέσεως. ὁ γὰ̣ρ ἐπ[ὶ τ]ῶν φαινομένων τινὰ κοινὰ ψευδο[λογῶν] τὸν ὅλον συ̣ν̣[αιρ]ή̣[σ]ει τρ[όπον] [τῆς σ]η̣μειώ[σεως]· πρὸς δὲ [τὸ] [διαφό]ρως [πέττειν] τινὰ̣[ς] ἐ̣ρ[οῦ][μεν ὡς] ὁ σημειο[ύμενο]ς τὴν ἀ[πὸ]

26–28 Ph. *R.M.* lxv, 315.

XXVI 14 προσθέσεως G. *fort.* προ[[σ]]θέσεως Ph. *ep.*

14–19 Ph. *R.M.* lxiv, 32.

who infer badly are corrected by the facts in individual cases, with the qualification that those who make declarations about anything whatsoever sometimes affirm confidently a universal proposition, and sometimes use probability. Certainty and probability are both derived from the observation of appearances.[66] For appearances have established that relativity is important in some cases, and yet in other cases there are constant similarities, as in the case of certain deadly poisons,
XXVI purgatives, and drugs with other powers. It is not at all surprising that, although there is great and manifold variation in foods and in the beings nourished by them, there can be a determinate limit to what men can eat. For this reason we shall not admit that there are men who eat hay, easily digest it, and are nourished. Some things (mentioned by our opponents) are fabricated according to opinion [67] and are taken from false records of the past; and, besides, nothing is accomplished by such inventions.[68] For anyone who misrepresents any common features of appearances will destroy the whole method of inference.

In respect to differences in digestion we shall say that he

[66] Bromius now answers the Stoic argument from variations in natural powers, e.g. digestion. He distinguishes first between certainty and probability (see below, 168, 171), then between relative and constant qualities. Only constant qualities provide a basis for certain inferences.

[67] According to the Epicureans all perceptions are true, and error is found only in opinion. Here Bromius accuses the Stoics of misrepresentation and falsification; cf. xvi.1–4.

[68] Or, "they do not accomplish their intention."

[τῶν φ]α[ιν]ομ[ένων] ποιεῖται μ[ε-] [τ]ά[βασιν τὰς ἐν αὐτ]οῖς καὶ τὰς πρὸς [ἄλλ]ηλα κ̣[οινό]τητας καὶ ἰδιότητας ἀναλογισάμενος· καὶ ὁ τ̣ο̣ύτ̣ῳ σ[τ]ατισάμενος, ὅτι τοῦτ' [ἐξ] ἀν[άγ]κης τοῖσδ' ἕ[πε-] [ταί] τισιν, π[ρεπούσῃ] χρῆτα[ι τῇ] μεταβά[σει]· ὁ πεποιθὼς δ[ὲ τοῖς] φαινο̣μ̣[ένοις] οὐ̣ δι[στ]άσ̣[ει] σὺν τῷ̣ [κενὴν φ]αίνεσθ[αι], πο[τὲ δὲ πλή-] ρ̣η̣ καὶ σ[ελή]νην εἶναι καὶ ἄν- θρωπο[ν] σὺν τῷ̣ [ἀποθν]ή[σ]κ[ει]ν ὥσ[τε] μὴ πάντως ἐπ̣' [ἀ]ριθ[μῶν] πολλῶν συμβε[β]ηκότων ἀναι- ρεῖσθαί τι, δι' ἣν αἰτίαν ἐφ' ὧν μὲν ἑνὶ προσπεσὼ[[με]]ν ἐρε̣ῖ<s> τ[ό-] δε τι τοιόνδ' εἶναι, πολλάκις δὲ δυσίν, ἔστιν δ' ὅτε πλείοσιν, τὸ πολύτροπον τῶν σημείων ἀναλογιζόμενος· ὅθεν οὐδεὶς ἐ[π-]

XXVII

ε[ὶ τρέφ]οντί <τι> κατ' ὀσμὴν καὶ χρόαν κ[α]ὶ χυλόν ἐστι παραπλήσιον, ὅ- τι̣ καὶ τ[ρό]φιμόν ἐστι διισχυ[ρ]ι- εῖται· π[ολλὰ] γὰρ ἀποκεκρυμμέ- νας ἔχ[οντα] διαφόρου[s] δυνάμεις τεθεώ[ρηται] χρόαις ὄντα κα[ὶ χυ-] λοῖς κα[ὶ τοῖς] ἄλλοις ἰδιώμασιν τοῖς φα[ινομ]ένοις παραπλήσια, καὶ ἀπ[ὸ πο]λλῶν τοὐναντίον. ὅταν δ' [ἀπο]κρούωσιν ἡμᾶς, πρῶ- τον μ[ὲν ὑπ]ομνησθ[ησόμε]θ' ὅτι τα[ῦτα πρ]ὸς τὴν τοῦ δόγμα-

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22 [ἄλλ]ηλα G. *Zeitschr.* 708. [τἄδ]ηλα G.
24–32 Ph. *R.M.* LXIV, 33.
39–1 ἐ[π] | ε[ὶ τρέφ]οντί <τι> Ph. *ep.* ε[ἴ] | τ[ι τρέφ]οντι Bahnsch, 28.
XXVII 2 ἐστί <τι> G.

who infers by signs makes his inference from appearances, using analogies of both peculiarities and common qualities; and one who establishes by this method that one thing follows from necessity on another makes a correct inference. One who relies on appearances will not question the fact that it is the nature of the moon to wax and to wane, and it is the nature of man to die. Therefore, not in every case should a thing be denied, even when many instances have occurred (that support a denial). Sometimes when you chance on one instance you say that a thing is of such and such a character, and often you use two cases and sometimes more, forming the analogy in accordance with the manifold nature of signs.[69]
XXVII For this reason no one affirms confidently that since a thing is similar to a food in odor, color, and taste, it is nourishing. For many objects that are different in certain hidden powers have been observed to be similar to appearances in color, taste, and other qualities; and in many cases the opposite is true.[70]

When the Stoics accuse us (of inconsistency),[71] we shall remember first that their arguments have no weight against

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[69] Bromius, still continuing his answer to the argument from variation and relativity, now points out that the validity of empirical inference does not depend on simple enumeration. Sometimes one or two cases are enough, and sometimes many cases are not sufficient—depending on the nature of the inference (cf. below, 171). His argument seems to be that inferences about variations of food and digestion are so complex that they require a broader empirical basis than do the comparatively simple inferences about the phases of the moon and human mortality.

[70] This passage is somewhat similar to the passage from Diocles quoted by W. Jaeger, *Diokles von Karystos*, 25–26.

[71] Bromius now gives a brief answer to the last Stoic argument, that Epicurean logic is inconsistent with Epicurean physics. Cf. Zeno's answer to this argument, xvii.28–xviii.17.

τος εὐ[λογί]αν οὐδέν ἐστιν, ἔπειθ' ὅτι κ[αὶ] ταῦθ' οὕτως ἀποφαινόμε[νοι] μαχόμ[εθ' οὐδα]μῶς ἑαυ[τοῖς, εἰ] τὰ πάθη [καὶ τ]ὰ φα[ι]νό[μενα π]αρέδειξ[ε] ṭ[αῦ]τα. [φαίνον]ται [γ]οῦν [ἄφθ]α[ρτοι καὶ] [ἀγέ]ṿ[ητο]ι οἱ [θε]ọὶ κ[αὶ αἱ τῶν ὄν][των ἀρχα]ị, διότι σὺν [τούτῳ τοι][οῦτοί εἰσι]ν καὶ διότι ṭ[οῦτ]ọ π[α]ρέδ[ειξ]ε[ν] ọ τῶν φαινο[μένων] ἐπ̣[ιλογισμό]ς· τά τε παρ' ἡμῖν [τρε]φόμεṿ[α ζ]ῷα, καθὸ τοιᾶσδε φύσ[εω]ς κε[κο]ινώνηκε σαρκίνης κα[ὶ] ἐκ παρ[απ]λησίας ο[ὐσί]ạṣ ẹṇκεκ̣[τη][μ]ένων γεγέν[νητα]ι, καὶ σ[ὺ]ν ṭ[ούτῳ] ζῷά ἐστιν· τ[αῦτ' ο]ὖν ἔλε[γε προ]φέρεσθαι καὶ ὑπὸ [τῶν] ḳινούντων τὸ κοινὸν ὅ[τι] ṭὰ [φα]νερὰ τ[ῶ]ν ἀδήλων ἐστ[ὶ ση]μεῖα καὶ ὑπὸ τῶ[ν] ἐ[κ]νευόṿτω[ν τ]ὸν καθ' ὁμοιότητ[α] τρόπον. εἴτε δὴ φαίνεται τὰ [τῶ]ν ἐναντιουμένων διαφέρον[τ̣α] τῶν πρότερον καὶ διαφόρου [τε]τευχότα ἀντιβ[ά]σεως, εἴτε [καὶ] ἔνια μόνον κ[αὶ μ]ὴ εὔθετα [ἐξ]εθήκαμεν χρᾶσθαι τοῖς

XXVIII

θέλουσιν, μεθοδικώτερ' αὐτοῦ π̣αρ[ασ]χόντος ἢ πρότερον ἢ μετὰ τὴν ἀπάντησιν. οὐδὲν γὰρ ἴσως [τ]ὸ διαφέρον εἰ καὶ τὰ πολλὰ πρότερον εἰώθ[α]μεν, νῦν δὲ καὶ τῇ τάξει τῶν ἐπιζητήσε-

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18–23 Ph. *R.M.* LXIV, 33.
26–29 Ph. *ibid.*
29 κινούντων D. [κ]εινούντων G.
XXVIII 1–2 αὐτοῦ π̣αρ[ασ]χόντος Ph. *ep.* αὐτοῦ παρέχοντος Ph. *diss.* 4.

the probability of our doctrine, and secondly, that in stating our views we do not in any way contradict ourselves, if feelings [72] and appearances have confirmed our statements. Indeed, the gods and the first elements of things appear to be indestructible and unborn, since this is a condition of their being such as they are, and since inductive inference from appearances has proved it. Living creatures that are nourished in our experience are living creatures in so far as they have shared in a certain kind of fleshy nature and have been born from those that have possessed similar substances, and with this characteristic they are living creatures.[73]

These, Bromius said, are the arguments brought forward by those who attack the common view that appearances are the signs of the unperceived, and by those who reject the method of analogy. Perhaps the views of our opponents (as Bromius gives them) appear to be different from those previously discussed (by Zeno), and to have received a different refutation. Or perhaps we have set forth only some of the arguments and these not very well arranged for those who
XXVIII wish to make use of them. Zeno presented them more systematically (than Bromius) by putting the Stoic arguments either before or after their refutation. Possibly it would be no better if we expounded repeatedly the Stoic arguments in the way that we have given them above. We shall now follow

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[72] The feelings constitute one of the empirical criteria of the Epicureans; cf. Frag. I.

[73] This passage points out that there is no inconsistency between the immortality of the gods and the mortality of living creatures in our experience, for the nature of each is established by inductive inference from appearances.

ων ἠ[κ]ολουθήκαμε̣ν ἐκθεῖναι τὰς κοινὰς καὶ διηκούσας κακίας διὰ τῶν λόγων, ἵνα καὶ τῶν [π]αραλελειμμένω[ν] κ[αὶ] τῶν [ὕ]στερον ἴσως συντε[θ]ησ[ο]μένων παραδοθησομένας ἔ[χ]ωμεν τὰς κακίας· ἐν μὲν τῷ Δημητριακῷ σ[φ]όδρ' ἐπιτόμως ἔκ[κ]ε[ι]ται. λέγετ[αι δὲ δι]ήκειν τό τε μὴ ἐπιλελογ[ίσθαι] τὴ[ν ἰδιότη]τα τοῦ κατ' ἀν[ασκευὴν ψιλῶ]ς̣ αἰρομένο[υ τ]ο[ῦ ἀδήλου παρ' αὐ]τὸ τοῦτο συν[α]ν[ασκευάζεσθαι τὸ] ἐν[αρ]γὲς πρ[ὸς τὸ διὰ τὴν ὁμοιό]τητα τὴν [το]ῦ ἐναργ[οῦς καὶ τοῦ ἀ]δήλου μὴ εἶ[ν]αι νοεῖν [τὸ] μ[ὲν ἐν]αργὲς ὑπάρ[χ]ον ἢ τοιοῦ[τον ὑ]πάρχον [τὸ δ' ἄ]δη[λ]ον οὐχ ὑπ[άρχ]ον ἢ οὐ [τοιοῦ]τον ὑπάρχον· [καὶ] τὸ μὴ [ἐπιλε]λογίσθαι ὅτι ο[ὐκ] ἀφ' οὗ ἔτ[υχε]ν ὁμοίου ἐφ' ὃ ἔτυχεν οἰόμε[θα] δεῖν μεταβαίνειν ἀλλ' ἀπὸ τοῦ μάλιστα ὁμοιοτάτου· κα[ὶ] τὸ μὴ β[λ]έπειν ὅτι τὸ εἶναί τινα ἰδ[ι]άζ[ο]ντα γένη λίθων καὶ ἀριθ[μ]ῶν καὶ ἄλλων τινῶν τοιούτων αὐτὰ τὰ φαινόμενα παρέδειξεν, οὐδὲν μαχόμενα τῇ κατὰ τὸ ὅμοιον μεταβάσει τοὐναντίον δ' ἐπισφοδρύνο[ν]τ' αὐτήν· καὶ τὸ μὴ ἐπιλελογ[ί]σθαι διότι οὐ κοινῶς ἀπὸ τῶν παρ' ἡμῖν ἐπὶ τἀφανῆ μεταβαίνο-

XXIX [μεν, ἀλλ'] ἀπὸ τῶν πανταχόθεν βεβασανισμένων καὶ μήτ' ἴχνος μήτ' αἴθυγμα πρὸς τοὐναντίον

a systematic order of inquiries by setting forth the common errors which pervade all their arguments, so that we may have the errors clearly marked, even of the arguments that have been overlooked, and of those that may be devised hereafter.[74]

In the work of Demetrius [75] the errors are stated very briefly: It is said in this book that it is a pervasive error of the Stoics not to have taken into account the peculiarity of the method of contraposition—viz., when the unperceived is denied, by this very denial the appearance is also denied,—as compared with the method of analogy of appearance and unperceived, according to which it is not possible to conceive that the appearance exists or is such as it is and the unperceived does not exist or is not such as it is.

And it is a mistake not to have taken into account the fact that we think one ought not to infer from any chance similarity to any other whatsoever, but only from constant similarities.

It is an error not to observe that appearances themselves have shown that there are some kinds of stones and numbers and other such objects which have certain peculiar characteristics, and that these appearances conflict in no way with inference by analogy, but on the contrary strengthen it.

It is also an error not to have taken into account the fact that we do not infer indiscriminately from things in our
XXIX experience to the unknown, but from facts tested in every way and not exhibiting the slightest evidence to the contrary.

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[74] In this transitional paragraph Philodemus apologizes for the plan of this work. He hopes that it has not been too repetitious, but at the same time he fears that it is incomplete and badly arranged. He implies that this work was written as a handbook for the use of students. A new arrangement will be followed in the rest of the work; instead of giving the individual Stoic arguments and their refutation, he will take up the fundamental and pervasive errors of the Stoic point of view.

[75] In this new section Philodemus first gives Demetrius' account of the five basic errors of the Stoics. This Demetrius is Demetrius the Laconian, an Epicurean contemporary of Zeno of Sidon. He is mentioned by Sextus *Pyrrh. Hyp.* Γ.137; *Adv. Math.* VIII.348; X.219; Diog. Laer. X.26; Strabo XIV.20 (C.658). Fragments of his works have been found at Herculaneum; cf. Crönert, *Kol.*, 100 ff.; Vittorio de Falco, *L'Epicureo Demetrio Lacone.*

παραδιδόντων· καὶ τὸ μὴ διειληφέναι ὅτι τὸ ᾗ τόδε τοιόνδ' ἐστίν, οἷον τὸ τὸν ἄνθρωπον ᾗ ἄνθρωπός ἐστιν φθαρτὸν εἶναι, καὶ τὰ λεῖα καὶ περιφερῆ [κ]αθὸ λεῖά ἐστιν καὶ περιφερῆ ποιητικὰ ἡδονῆς, καὶ καθό[λ]ου πᾶν τὸ τοιοῦτο γένος οὐκ ἀνασκευῇ πάντως ἁλίσκετ', ἀλλὰ πολλὰ καὶ διὰ τῆς ὁμ[ο]ιότητο[ς], ὥσπερ τὸ τὸν ἀπο[κεφ]αλισθέν[τ]α παρόσον ἀποκεκ[εφ]ạλιστ[αι, μὴ πά]λ̣ι [φ]υομέν[ην]

[κ]αὶ τὸν [ ]

[. . .]

[ὁ]μοι̣[ο]τή[τ]ω[ν]

[με]ταβαίνει[ν]

κ[αὶ μὴ]ν̣ [ἡμῖ]ν̣ [μόνον] οὐχὶ ταὐτ[ὰ] παρεί[χε]τ̣', ἀλ̣[λ'] ἀπὸ τῶν ἀνωτ[άτω] ἐπὶ τὰ [κατωτ]άτω καὶ πλε[ῖστον] ὑποβεβηκ[ότ]α ἐ̣[π]εξηργάζε[το] διαλεγόμενος· καὶ πρῶτον μὲ[ν] ἔφη τοὺς χρωμένους ταῖς ἐπ[ι]χειρήσεσιν ἀγνοεῖν τρόπῳ̣ [τι]νὶ περιτρεπομένους [ἀ]σχημ[ό]νως. [ο]ὓς γὰρ συντιθέα̣[σι]ν λόγο[υ][ς] τὸν κ̣ατὰ τὴν ὁμοιότ[ητ]α τρόπον ἀθετοῦντες, τ[ο]ύτους βεβαιωτὰς αὐτοῦ παρισ[τάν]ουσιν. ὅταν γοῦν ἀπαντῶσίν ποθε[ν] ὅτι λ[όγ]ου χάριν, εἰ τὰ παρ' ἡμῖν ἐστι ζ[ῷ̣]α φθαρτά, [κ]α[ὶ τ]ὰ ἐν τοῖς ἀδήλοις, καὶ τοῦτο κατασκευάζοντ[ε]ς ἐγκ̣αλ̣ῶσι κα̣ὶ [τὸ] τὸ γέ-

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XXIX 15 Ph. *R.M.* LXIV, 33.
20–21 Ph. *R.M.* LXV, 315.
22–23 Ph. *R.M.* LXIV, 34.

Further, it is an error not to have discerned that the statement, "In so far as something is such and such,"—as for example, that man in so far as he is man is destructible, and smooth and round atoms, in so far as they are smooth and round, are creative of pleasure,[76]—and statements of this type in general are not all tested by contraposition, but many of them are tested by analogy. For example,

"A man who has been beheaded, in so far as he has been beheaded, does not grow a head again" . . .

He [77] presented to us nearly the same arguments, but he treated everything in his discussion, from the highest to the lowest and most fundamental arguments. And first he said that those who use dialectical reasoning do not know that they are shamefully refuting themselves. For the arguments that they devise to refute the method of analogy contribute to its confirmation.[78] For when they attack the statement, for example, that

"If living creatures in our experience are destructible, those in unknown places are also;"

and when in the course of their argument they object that

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[76] This is an application of Epicurean atomism; cf. Lucretius IV.622.

[77] The following passage presents another discussion of the fundamental errors of the Stoics. Because of the break in the text we do not know what Epicurean Philodemus is following here. Philippson suggests that he is following an oral discussion of Demetrius which was more detailed than the written account given above. Cf. *Rhein. Mus.* LXIV (1909), 37–38.

[78] In the first place, the Stoics are self-refuting, for they use analogical arguments to discredit analogy; e.g. in their arguments about indefinite variation and about unique cases. Cf. also X.17–26; XI.20–23.

νος ὄνθ' ὅμοια διαφορὰν ἀλλήλων προσφέρεσθαι παρὰ τοὺς ἀέ-

XXX *ρας καὶ τὰς τροφὰς καὶ τὰς ἄλλας ὁσασδήποτ', ἀπὸ τῶν παρ' ἡμῖν φαινομένων ὁρμώμενοι καὶ περὶ ἐκείνων τὰ παραπλήσια καταξιοῦντες οὕτως προάγουσι· καὶ ὅταν, ὡς παρ' ἡμῖν ἐστίν τινα μοναχά, μηδὲν εἶναι λέγωσ[ι] θαυμαστὸν εἰ κἀν τοῖς ἀδήλοις ἐστίν τις φύσις τῶν οἷς ἐνεκυρ[ή]σαμ[ε]ν διαλλάττουσα, τὴν μετάβ[ασι]ν ἀπὸ τῶν ὁμοίων φαίνοντ[αι] ποιού[μ]ενοι· παραπλησίως δὲ καὶ ἐπὶ τῶν ἄλλων, ὥστε τ[ὴν] περικατωτρο[πὴ]ν ἔχουσιν ἀκ[ο]λουθοῦσαν. ἀλ[λὰ] δὴ καὶ τ[οὺς κακ]ῶς ση[μ]ειου[μ]ένους πε[ρὶ τῶν ἀ]δήλ[ων] εὐθύ[νο]ντες οἷον [εἰς] τερα[τ]εία[ν] [ἐμπεπτώκ]ασιν· [ἐάν] γέ τις λέγῃ [πάντας] ἀνθρώ[πο]υς εἶναι λευ[κοὺς ἀπ]ὸ τῶν παρ' ἡμῖν ὁρμώμε[νος ἢ] τοὐναντί[ο]ν ἀπὸ τῶν Αἰθιό[π]ων, ἢ πανταχοῦ τοὺς ὀρθοὺς γν[ώ-]μ[ο]νας περὶ μεσημβρίαν ἐν ταῖς θεριναῖς τροπαῖς [οὐκ ἔ]χειν σκιάν, ἆρ' οὐ μάταιος [ἔσ]ται; τὸν γὰρ οὕτω σημειούμενον τῷ μὴ πάντα περιωδευκέ-*

XXX 15 ἔχουσιν ἀκ[ο]λουθοῦσαν *vel* ἔχει συνακ[ο]λουθοῦσαν G.

16 [κακ]ῶς ση[μ]ειου|[μ]ένους Ph. *R.M.* LXIV, 34. [εἰκ]ῆ ση[μ]ειου|[μ]ένους G.

18–20 Ph. *R.M.* LXIV, 34.

26 [ἔ]χειν D. [ἔχε]<ι>ν G.

animate objects, though similar in kind, differ from each other
XXX according to atmospheric conditions, foods, and many other circumstances, they are using appearances in our experience as the basis for making judgments about similarities among the unperceived. And when they say that, since there are some unique cases in our experience, it would not be at all surprising if among the unperceived there is some nature which differs from things which we have met with, they appear to be making the inference from similars. It is the same in other cases, so that as a result they refute themselves.

Moreover, in correcting those who infer badly about the unperceived . . . they fall into error. If, indeed, anyone says that all men are white, starting from those in our experience, or black, starting from the Ethiopians, or that everywhere the straight indices of the sundial at noon have no shadow at the summer solstice, will not his argument be futile? [79] We shall say that the one who infers thus fails because he has not gone

[79] Cf. Gomperz' comment on this passage, *Herkul. Stud.* I.xix–xx. He compares Cleomedes, *Cycl. Theor.* I.53 (ed. Ziegler), 96–98.

ναι καλῶς τὰ φαινόμενα διαπίπτει[ν ἐρ]οῦμεν, ἦ μὴν καὶ δι' αὐτῶ[ν ε]ὐθύνεσθαι τῶν φαινομένω[ν]. ἀκυροῦντές γε μὴν τὸν κατὰ τὴν ὁμοιότητα τρόπον τῆς σημειώσεως ἀσημείωτα πάντα ποιοῦσι τἀφανῆ. σημειώσεως γὰρ ὀρθῆς οὐδεὶς παρὰ το[ῦτ]ον ἔ[σ]τιν ἕτερος

XXXI τρόπος. ἀλλ' εἰ καὶ τὰ προηγούμενα τῶν σημείων ὁτὲ μέν ἐστιν καὶ ἀνόμοια ποτὲ δὲ καὶ ἐναντία, τήν γε σύνθεσιν ἐξ ἀνάγκης ἀπολαμβάνει <τις> καθ' ὁμοιότητα πορευόμενος, εἴπερ ἀποδεῖξαι μέλλει, καθάπερ ἐν τοῖς πρότερον λόγοις παρεστήσαμεν. οἱ δὲ φάσκοντες ἠρτῆσθαι τὸν κατ' ἀνασκευὴν τρόπον τῆς σημειώσεως ἐκ το[ῦ] καθ' ὁμοιότητα, κἂν ταὐτὸ τῇ δυνάμει λέγωσιν ἡμῖν, τῇ [γ]ε διδασκαλίᾳ καταλείποντες [ὑ]ποψίαν ὡς δύ' ὄντων σημειώσ[ε]ως τρόπων [ἀ]ντε[ι]λε[γ]μένων δ' ἀλλήλοις. [συγκα]θηρῆσθαι [τοῦτο μὲ]ν ἡ[μ]ῖ[ν ὁ]μονοοῦσ[ι]ν ἀ[νηρ]ημέ[νου τἀφανοῦς τὸ ση]με[ῖον αὐτό], [δοκοῦσι] δὲ τῷ τοι[ούτ]ῳ σ[ημεί]ῳ προσχρῆσθαι τῷ [κα]θ' [ὁ-]

XXXI 4–5 ἀ|πολαμβάνει <τις> Ph. *ep.*
5–6 πο|ρευόμενος Ph. *ep.* πο|ρευομένων OG.
17–19 Ph. *R.M.* LXIV, 34.
20 [δοκοῦσι] δὲ Ph. *ep.* [ἀγνοοῦσι] δὲ Ph. *R.M.* LXIV, 34.
20–21 τῷ τοι[ούτ]ῳ| σ[ημεί]ῳ D. τῷ [μὴ] τοι[ούτ]ῳ|μ[όν]ον Ph. *ep.* τό [γε] τοι[οῦτο]ν| σ[ημεῖ]ον Ph. *R.M.* LXIV, 34.

through all appearances well, and indeed that he is corrected by the appearances themselves.[80]

Those who reject the method of inference by analogy make all unperceived objects unsignified. For there is no other
XXXI correct method of inference besides this. But even if the antecedent signs are sometimes similar and sometimes dissimilar, one who proceeds according to analogy necessarily admits the synthesis of signs, if indeed he is going to construct a proof, as we have established in the previous arguments.[81] Those who say that the method of contraposition depends upon the method of analogy would say virtually the same thing as we do, but they leave the suspicion by their teaching that there are two methods of signification opposed to each other.[82] They agree with us that the sign and thing signified are denied along with each other and that when the unperceived is denied the sign is also, but since they seem to use contraposition as

[80] The second fundamental error of the Stoics is that they fail to realize that empirical inferences resting on too narrow a basis are corrected by further examination of appearances.

[81] In rejecting analogy the Stoics destroy all inference, for analogy is the only correct method.

[82] This sentence probably refers to certain otherwise unknown Epicureans who held that contraposition is a separate method derived from analogy; cf. Zeno's recognition of the validity of contraposition in XI.32–XII.31 and Philippson's discussion in *Rhein. Mus.* LXIV (1909), 37–38. The authority for the present passage, however, thinks that contraposition should be rejected entirely. Philodemus' own stand on this problem is not clear.

μοιότητα τρόπῳ καὶ παντελῶς διαπ̣ίπ̣τει[ν]. οἱ δ' οὖν ἀντιδοξάζον[τ]ε[s] ἡμῖν καὶ κατὰ [τὸ]ν τρόπον ἀσημείωτα ποιοῦσιν αὐτοῖς τἀφαν[ῆ. συν]αρεσκόμενοι γοῦ[ν τ]ῷ [πά]ντας ἀνθρώπους εἶναι τρώσ[ε]ω[s κ]αὶ νόσου καὶ γήρως καὶ θ[ανάτ]ου δε[κ]τικούς, καὶ μ[ή]τ[ε Κεντ]αύρου[s εἶ]ναι μήτε Πᾶνας μ[ήτ'] ἄλλο τι τῶν τοιούτων, οὐκ ἄλλῳ τρόπῳ βεβα[ιώσου]σιν [ἢ τῷ] διὰ τῆς ὁμοιότητ[ος, ὥστ', εἰ] μὴ κύριός ἐστιν, οὐ πεισθήσονται περὶ αὐτῶν. ἔτι τοιγαροῦν παραπέμπουσιν ὡς οὐ πάντα καθ' ὁμοιότητα σημειοῦσθαι λέγομεν

XXXII λαμβανομένου σημείου τοῦ προηγητικοῦ, τινὰ δὲ μόνον. ἐρωτῶσι γοῦν ἐπὶ τῶν κατ' ἀνασκευήν, ποῖον ὅμοιον ἔχομεν, ὥσπερ ἐπὶ τῶν ὁμοίων οὐκ ἐρωτηθησόμενοι, πῶς ἀνασκευάζεται, μᾶλλον δὲ καὶ ἐπὶ τῶν ἐναντίων· ἔτι δ' ὡς ἕνα μόνον τρόπον τῆς σημειώσεως, τὸν καθ' ὁμοιότητα, λέγομεν, οὐ τρεῖς, καθὸ δὲ τρί[α γ]ένη σημείων λέγομεν, οὐ τὴν ὁμοιότητα μόνον αὐτῶν ἐκκ[ρί]νομεν· πρὸς δὲ τούτοις ὡς οὐ τ[ὰ μό]νοις ἡμῖν φαινόμενα [ἢ πει]ρασθέντα σημεῖα [συ]λ̣λέ[γομ]εν, [ἀλλὰ τὰ]

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28 τρώσ[ε]ω[s] D. τρ[ωτοὺς] G.

XXXII 13 ἐκκ[ρί]νομεν Ph. *R.M.* LXIV, 34. ἐνκ[ρί]νομεν G.

16–18 Ph. *R.M.* LXIV, 34; cf. G. *Zeitschr.* 706.

well as the method of analogy, they are completely wrong. Our opponents even by their own method make the unperceived unsignified to themselves. Indeed, when they agree that all men are vulnerable and liable to disease, old age, and death, and that there are no Centaurs or Pans,[83] or anything else of such a nature, they do not confirm these statements in any other way than by the method of analogy. Therefore, if analogy is not a valid method, they will have no ground for these views.

They further ignore the fact that we say that not all things
XXXII are inferred by analogy when the antecedent sign is used, but only some things. Indeed, they ask in instances of contraposition what kind of similarity is present, just as if they would not be asked to explain even more in the opposite cases how inferences from similarities can be instances of contraposition.[84]

Further, they ignore the fact that we say the method of analogy is only one method of inference, not three. And when we say that there are three kinds of signs, we do not base the distinction on their analogy alone.[85]

In addition, they ignore the fact that we collect not only the signs appearing to us or tested by our experience, but

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[83] Cf. Lucretius v.878. A suggestion of the Stoic attitude toward Centaurs may be found in Cic. *De Nat. Deor.* II.5.

[84] The Stoics try to show that contraposition cannot be reduced to analogy; but they ignore the fact that analogy cannot be reduced to contraposition.

[85] The Stoics are wrong in arguing that the Epicurean triadic division of signs (see XXXVI.17–24) implies three different kinds of inference.

καὶ τ[οῖς ἄλλο]ις [ἐκ τῆ]ς π̣ε[ίρας]
εἰλημμ[ένα φ]α̣[νερ]ά̣· ἆρ' οὐχὶ
τῷ Κρήτ[ην νῆσ]ο[ν ε]ἶναι κα[ὶ Σι-]
κελίαν ἀπ[ισ]το[ῦ]σ[ιν] οἱ μὴ παρ[α-]
γενηθέντες; καὶ διότι σὺν το[ύ-]
τῳ φαμὲν ὑγιῆ [τ]ὸν καθ' ὁμοι-
ότητα τρόπον εἶναι τῆς σημει-
ώσεως, σὺν τῷ [μη]δὲ ἓν μά-
χεσθαι τῶν ἄλλ[ω]ν φαινο[μέ-]
νων μηδὲ τῶν [ἐ]κ τούτων π̣[ρο-]
απ[ο]δεδειγμένων. ἔνι[α δ' ἀν-]
όμο[ια] τοῖς παρ' ἡμῖν [θεωρ]ου[μέ-]
νοις ἀντιπίπτοντα προφε[ρ]ό-
μενο[ι] παρεστήκασιν, ὡ[ς τὸ]ν
ὅλον τρόπ[ον] ἐ[λέ]γχοντε[ς. π]α-
ραπαίουσιν [δὲ κα]ὶ καθόσον αὐ-
θεκάστω[ς] ἀλη[θὲ]ς εἶναί φασι
τὸ καλού[μ]ενον συνημμένον
ὅταν τῷ δευτέρῳ συνανασκευ-
άζηται τὸ πρῶτον καὶ ἴδιον ση-
μεῖον, ὅταν [α]ἱρομένου τοῦ ἀ-
δήλου συνανασκευάζηται τ[ὸ]
XXXIII *φαινόμενον, καὶ κρίσεως ἀρίσ-*
της οὔσης συνημμένου καὶ <ἰ>δίου
σημείου καθεστῶτος ὅταν μὴ
δυνώμεθα διανοηθῆναι τό τε
μὲν πρῶτον ὑπάρχον τὸ δὲ δεύ-
τερον μὴ ὑπάρχον καὶ ἀντιστρό-
φως, καὶ οὐδ' αὐτῶν ἄλλῳ τινὶ
κατακλειόντων τὰ δι' ἀνασκευ-
ῆς ἁλισκόμενα. ἀγνοοῦσιν δὲ
καὶ διότι πᾶς ὁ καλῶς σημειού-
μενος τὸ παντοδαπὸν ποίκιλ-

18–19 Ph. *ep.*
27–28 Ph. *R.M.* LXIV, 34.
28–29 [θεωρ]ου[μέ] | νοις D. [θηρ]ου[μέ] | νοις Ph. [τηρ]ου[μέ] | νοις G.

also the appearances taken from observation by others. Do those who have never been there doubt that Crete and Sicily are islands?[86] And therefore we say that the method of analogy is a sound method of inference, with this condition, that no other appearance or previously demonstrated fact conflicts with the inference. Bringing forward a few dissimilar cases that conflict with things examined by us, they have set them forth as if they were refuting the whole method.[87]

The Stoics err also in so far as they say bluntly that the so-called hypothetical proposition[88] is true whenever the first term is denied by contraposition along with the second, and
XXXIII that the particular sign is established whenever the appearance is denied by the denial of the unperceived. But we say that the best test of the hypothetical proposition and the particular sign is established whenever we are not able to conceive that the first exists and the second does not, and conversely. Moreover, our opponents do not confirm by any other method than this the inferences made by contraposition.[89]

Again, they do not know that everyone who infers well about the unperceived objects that accompany appearances

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[86] The Epicureans avoid epistemological solipsism by putting empirical inference on a social level. This is true also of ancient medical empiricism, e.g. Galen *Subfig. Emp.* (ed. Bonnet), 52; *On the Best Sect* (ed. Kühn), I.148.

[87] In pointing out faulty inferences the Stoics merely show that these inferences have not been thoroughly tested, not that the method of analogy is unsound.

[88] *συνημμένον.* This was the basic form of Stoic inference; cf. below, 158–160.

[89] The Stoic method of contraposition is really reducible to inconceivability.

μα τῶν φαινομένων κατοπτεύσας ὥστε μηδὲν ἀντιπίπτειν, οὕτως τὸ συν[α]κολο̣υ̣θοῦν τοῖς ἐ[ναργέσιν] ἄδηλον ἀξιοῖ̣. [ἀδύνατον οὖν νοήσας] τάς τε̣ [φύσε]ις τῶ[ν ὄντων καὶ τὴ]ν ἐξ ἀ[λ][λήλ]ων γέ[νεσι]ν [δι]αφωνεῖν [τ]οῖς ἐναρ̣[γέσιν] ο̣[ὕτω] τὸν κόσμ[ο]ν, ὡς ἐγέ[νετο, πα]ρίστησιν· καὶ καθόσον οὐ [πεπο]λυπρ[α]γμονήκασιν τὸν ὀρθὸν τρόπον τῆ[ς] καθ' ὁμοιότητα μεταβάσεως. ὅταν γὰρ λέγωμεν, ἐπεὶ [τ]ὰ παρ' ἡμῖν τοιαῦτα καὶ τ[ὰ]ν τοῖς ἀδήλοις τοιαῦτ' εἶναι, [κ]αθὸ τοιαῦτ' ἐστὶν τ[ὰ] παρ' ἡμῖν, οὕτως αὐτοῖς συν[ηρ]τῆσθαι δοξάζομέν τι τῶν ἀδήλων, οἷον ἐπεὶ οἱ παρ' ἡμῖν ἄνθρωποι καθὸ ἄνθρωποι θνητοί εἰσιν καὶ εἴ πού εἰσιν ἄνθρωποι θνητοὺς εἶναι. τέτταρα δὲ τῆς ᾗ καὶ καθό καὶ π̣αρό φωνῆς σημαινούσης, [τὸ] μ̣[ὲ]ν ὅτι τόδε τῷ̣δε ἐξ ἀνάγκης συνέπεται καὶ ἴσον τῷ [σ]ὺν τούτῳ̣ τόδε εἶναι σὺν

XXXIV *τῷ τοῦτ' ἐξ ἀνάγκης αὐτῷ παρακολουθεῖν, καθ' ἣν σημασίαν τοὺς ἀνθρώπους λέγομε[ν] ᾗ εἰσιν ἄνθρωποι σαρκίνους εἶν[αι κ]αὶ νόσου καὶ γήρως δεκτικούς· [κ]α[ὶ τ]ὸ λόγον ἴδιον εἶναι τόνδ[ε το]ῦδε καὶ ταύτην πρόληψιν, [ὥσ]περ ὅταν εἴπωμεν τὸ σῶμα καθὸ σῶμα*

XXXIII 16–19 Ph. *R.M.* LXIV, 34–35.

observes carefully the manifold variety of appearances in order to be sure that there is no conflicting evidence. He considers it impossible that the nature of things and their generation from each other should be inconsistent with appearances. Thus he expounds the origin of the cosmos.[90]

And further the Stoics err in so far as they have not taken the trouble to understand the right method of analogical inference. Whenever we say,

> "Since things in our experience are of such a nature,
> "Unperceived objects are also of this nature *in so far as* things in our experience are of this nature,"

we judge that there is a necessary connection between an unperceived object and the objects of our experience. For example,

> "Since men in our experience *as men* are mortal,
> "If there are men anywhere,
> "They are mortal."

There are four things that the words "as such," "according as," and "in so far as," [91] signify:

First, that this follows from necessity on that. This statement is equivalent to the statement that that is a condition for
XXXIV this, with the implication that this is necessarily a consequence of that. According to this meaning we say,

> "Men *as men* are made of flesh and are subject to disease and old age." [92]

Second, there is also the meaning that this is the particular definition of that, i.e., this is the anticipation [93] of that, as in the statement,

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[90] Philodemus here gives the Epicurean justification of empirical metaphysics. The attitude is much the same as that of the Greek astronomers, who undertook to establish a system that would "save the appearances" (*σώζειν τὰ φαινόμενα*). Cf. below, 135.

[91] *ᾗ καὶ καθό καὶ παρό.* Philodemus apparently uses these words synonymously. He asserts that the Epicureans can establish empirically the nature of things "as such."

[92] The first use indicates predication based on a necessary connection. Cf. J. L. Stocks, "Epicurean Induction," *Mind* xxxiv (1925), 185–203.

[93] *πρόληψις.* This is the Epicurean counterpart of formal definition; see below, 141.

ὄγκον ἔχειν καὶ ἀντι[τυ]πίαν,
καὶ τὸν ἄνθρωπον ᾗ ἄνθρωπος
ζῷον λογικόν· καὶ τ[ὸ] συμβε-
βηκέναι τόδε ṭ[ῷ]δε, καθ' ὃν τρ[ό-]
πον ἀξιοῦμεν τὸν ἄνθρωπο[ν]
καθὸ ἄνθρωπ[ός ἐ]στ[ιν, ἀπο-]
[θνήσκ]ειν ὀ[ρθῶς· καὶ τὸ]
[συμβε]βηκ[έναι τόδε ἐκ τ]ọῦδ[ε κα-]
θ' ọ[μο]ιότητ[α ληπ]τοῦ, οἷον [λέ-]
[γομεν κ]αὶ τοὺ[ς ἀνθρ]ώπ[ους],
[καθὸ ἄ]φρονε[ς, κακο]δαιμονεῖν
μάλιστα, κα[ὶ τὸ μα]χα[ίρ]ιον τέ-
μ[νει]ν καθὸ ἠκόνητ[αι], καὶ τὰς
ἀ[τ]όμους καθὸ πλήρε[ις] εἰσὶν ἀ-
φθάρτους εἶναι, καὶ τὸ σῶμα κα-
θὸ β[άρ]ος ἔχει κάτω [φέρεσθα]ι. π[α-]
ρακ[ολ]ουθεῖ μὲν οὖν [το]ύτοις κα[ὶ]
τὸ ἐξ ἀνά[γ]κης, ἡ δ' ὀνομασ[ία]
κατ' ἴδια τάττεται. σημειού-
μεθα δὲ καθ' ἕκαστον ἐ[ξ] ὧν
ὁ λόγος αἱρεῖ. τοῖς δ' ἐπιλαμβα-
νομένοις τῆς καθ' ὁμοιότητα
σημειώσεως ἥ τε παραλλαγὴ
τῶν εἰρημένων ἀνεπισήμαν-
τός ἐστι καὶ πῶς τὸ καθό λαμ-
βάνομεν, οἷον λόγου χάριν ὡς
ὁ ἄνθρωπος καθὸ ἄνθ[ρ]ωπος
θνητός ἐστι· διὸ καί φασιν, ἂν
XXXV *μὲν παριῆται τὸ καθό, τὸν λόγον*
ἀπρόβατον ὑπάρξειν, ἂν δὲ πα-
ραλαμβάνηται, τῷ κατ' ἀνασκευ-
ὴν χρήσασθαι τρόπῳ. τὸ γὰρ
τόδε συνηρτῆσθαι τῷδ' ἐξ ἀ-

XXXIV 14–19 Ph. *R.M.* LXIV, 35.
XXXV 4 <ἀλλὰ> *γὰρ* Ph. *R.M.* LXIV, 35.

"Body as body has mass and resistance,"

and

"Man as man is a rational animal."

Third, this is a property of that. According to this meaning we may judge rightly that

"Man as man dies." [94]

Fourth, this results from that taken according to some attribute, as we say that

"Men in so far as they are unwise are most miserable,"

and

"A knife cuts in so far as it is sharp,"

and

"Atoms in so far as they are solid are indestructible,"

and

"A body according as it has weight falls downward." [95]

Necessary consequence is involved in all these four meanings, but the terminology is assigned according to the particular cases. We infer in each case according to the meaning which the argument requires. But those who attack the inference from analogy do not indicate the distinctions just mentioned, namely, how we are to take the "according as," as in the statement, for example,

"Man as man is mortal."

XXXV Hence they say that if the "according as" is omitted, the argument will be inconclusive; if it is admitted, the method of

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[94] The third meaning probably refers to attributive predication of a property.

[95] In the fourth sense, the term refers to the powers or activities resulting from certain attributes.

νάγκης λαμβάνομεν [ἐ]ξ αὐτ[οῦ] τοῦ πᾶσιν οἷς περιεπέσομεν τεθεωρῆσθαι τοῦτο παρακολουθοῦν, καὶ ταῦτα ποικίλοις ἐκ ταὐτοῦ γένους ἐντετυχηκότων ζῴοις καὶ παραλλαγὰς κατ̣<ὰ> τἄλλα πρὸς ἄλληλ' ἔ[χουσ]ι τῶν δὲ τ[οιο]ύ̣των κοιν[οτ]ή[τ]ων πᾶσι μ̣[ετ]έχουσιν̣· ὃν [τρ]ό[πο]ν φά[σ]κο̣μ̣[εν] ἄ[νθρ]ωπον, [καθὸ κ]α̣ὶ̣ ᾗ ἄνθρω[πός ἐ][στιν, θ]νητὸν [ὑπάρχει]ν̣ τῷ π[ε]ρι[ω][δε]υ̣κέναι π[ολλοὺς] καὶ π̣οι[κί][λους ἀ]νθρώ[πους παρ]αλλαγ[ὴν] [κα]τ[ὰ τ]οῦτο [τὸ σύμπ]τωμα μηδ[εμί][αν] ἐφευρό̣[ντες εἰ]ς τοὐναντίον [τε] μηδὲν ἡμᾶς ἐπισπώμε[νο]ν, ὥστε κατὰ τὸν τρόπον [τοῦ]τον εἰλῆφθαι καὶ ἐπὶ τούτων κα[ὶ] ἐπὶ τῶν ἄλλων ἐφ' ὧν τάττομεν τὸ καθό καὶ τὸ ᾗ, τ[ὴν] ἰδιότητα ἐνδεικνυμένου τοῦ μὴ ἄλλως ἢ σὺν τούτῳ καὶ ἐξ ἀνάγκης παρακολουθεῖν τοῦτο τούτῳ, καὶ οὐκ ἐπὶ τῶν δι' ἀνασκευαζομένου σημείου μόνον λαμβανομένων. καὶ ἐπὶ τούτων δὲ τὸ πᾶσιν περιπεσεῖν τοῦτ' ἔχουσιν παρακολουθοῦν ἐργάζεται τὴν διαβεβαίωσιν. ἐκ γὰρ τοῦ

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10 ἐντετυχηκότων <ἡμῶν> Ph. *ep.*
11 κατ̣<ὰ> *vel* καὶ G. καὶ O.
14–16 Ph. *R.M.* LXIV, 35.
17–18 π̣οι[κί]|[λους] Ph. *ibid.* π̣οι[κίλ]|[ους] G.
19–20 μηδ[εμί]|[αν] ἐφευρό̣[ντες] Ph. *ibid.* μηδ[ὲ]|[ν] ἐφε[υ]ρεῖ[ν] G. μηδ[εμ]|[ίαν] G. *Zeitschr.* 706.
21–22 ἐπισπώμε|[νο]νD. ἐπισπώμε[ν]|[ο]ν G.

contraposition is used.[96] But we Epicureans take this to be necessarily connected with that from the fact that this has been observed to be a property of that in all cases that we have come upon, and because we have observed many varied living creatures of the same genus who have differences in all other respects from each other, but who all share in certain common qualities (e.g., mortality). According to this method we say that man according as and in so far as he is man is mortal, on the ground that we have examined systematically [97] many diverse men, and have found no variation in respect to this characteristic and no evidence to the contrary.

Therefore the inference is made according to analogy both in these cases and in all the others in which we use the terms "as such" and "according as," and where the peculiar relation between objects is indicated by the fact that one does not occur without the other, and one follows necessarily on the other. We do not use analogy in those cases where inference is made by a sign tested only by contraposition. Yet even in these latter cases the discovery that all instances have the same property confirms the inference. From the fact that all

[96] The Stoics fail to distinguish the different meanings of "according as;" and they are wrong in supposing that this term is used only in the method of contraposition (i.e. the formal sense).

[97] περιωδευκέναι; cf. Crönert, *Kol.*, 101, 102; Galen, *De Placitis Hippocratis et Platonis* (ed. Kühn), v.802.

τὰ παρ' ἡμῖν κινούμενα πάντα διαφορὰς μὲν ἄλλας ἔχειν

XXXVI κοινὸν δὲ τὸ διὰ κενωμάτων, πάντως τὸ κἂν τοῖς ἀδήλοις, καὶ ἵνα, πυρὸς μὴ ὄντος ἢ γεγονότος, ὁ καπνὸς ἀνασκευασθῇ, τὸ πάντως καὶ ἐπὶ πάντων καπνὸν ἐκ πυρὸς ἐκκρινόμενον τεθεωρῆσθαι διατεινόμεθα. διαπίπτουσιν δὲ καὶ καθόσον οὐ συνβλέπουσιν τὸ λαμβάνειν ἡμᾶς ὅτι οὐδὲν ἀντιπίπτει διὰ τ[ῶ]ν φαινομένων. οὐ γὰρ ἱκανὸν εἰς τὸ προσδέξασθαι τὰς ἐπ' ἐλάχιστον παρεγκλίσεις τῶν ἀτόμων διὰ τὸ τυχηρὸν καὶ τὸ παρ' ἡμᾶς, ἀλλὰ δε[ῖ] προσεπιδεῖξα[ι κ]αὶ τ[ὸ] μηδαμ̣[ῶ]ς̣ [ἑτέρ]ῳ̣ μάχεσθ[αι] τῶν ἐνα[ργῶν. κ]αὶ τὴν παρ[αλ][λα]γὴν δὲ [οὐ δεῖ ἀ]γνοεῖν τῶν τ[ε] προηγουμέ[ν]ων σημείω[ν τ]ῶν τ̣ε̣ [γε]νικῶν κ[αὶ] τ[ῶν] εἰδι̣[κῶν π]ολλ̣ὴν καὶ πο[ικί]λην οὖσαν· οὐ γὰρ [ἄν] π̣οτε μ[όν]οις ἠξίουν χρῆσ[θαι] τοῖς ἀν[ασ]κευαζομένοις ἐ[ὰν] μὴ τ[ἀφα]νὲς ὑπάρχῃ. πλανῶν[τα]ι δὲ κ[αὶ τα]ῖς ὁμωνυμίαις· λε[γο]μένου γὰρ σημείου καὶ τοῦ φαινομένου περὶ ὃ συνίσταθ' ἡ σημείωσις, [ὡς] τῆς κινήσεως καὶ

XXXVI 3 πυρὸς μὴ Ph. *ep.* μὴ πυρὸς οὐκ OG.

4 ὁ καπνὸς OPh. *ep.* ἢ καπνός G.; *cf.* G. *Zeitschr.* 707. τὸ πάν|τως Ph. *ep.* τῷ πάν|τως OG.

19–20 [τ]ῶν τε|[γε]νικῶν κ[αὶ] τ[ῶν] εἰδι[κῶν] D. [καὶ τ]ῶν [γε]|νικῶν [εἰδικῶν] τ' εἰδότ[ας] Ph. *R.M.* LXV, 316.

22 [ἄν] π̣οτε D. [δή] π̣οτε G.

moving objects in our experience have other differences but a
XXXVI common condition that they move through empty space, we maintain in every case that this condition of motion prevails even in unperceived places.[98] And in order to make the contraposition,

> "If there is or has been no fire,
> "There is no smoke,"

we contend that always in all cases smoke has been observed to be given off by fire.[99]

Our opponents also err in so far as they do not observe the fact that we establish through appearances that there is no conflicting evidence. For it is not sufficient to admit the very slight swerves of the atoms because of chance and free will; but we must also prove that this swerve does not in any way conflict with any other appearance.[100] And they should not ignore the difference between antecedent, generic, and specific signs,[101] since the difference is great and varied. For then they would not think that they should use only those signs whose existence is denied if the unperceived object does not exist.

They go astray also because of equivocal expressions; for the word "sign" is used of an appearance about which an inference is established, as in the case of motion and the

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[98] The inference, "If motion, then void," is here treated as a regular inductive inference. Cf. above, 43, note 24.

[99] On the inference of fire from smoke, see Sextus *Adv. Math.* VIII.151–152.

[100] The inclination of atoms is here justified by the principle of *οὐκ ἀντιμαρτύρησις*; see below, 144. For the Epicurean view of inclination of atoms, see Lucretius II.216–224.

[101] *προηγουμένων*, *γενικῶν*, and *εἰδικῶν*. A triadic division of signs is mentioned in XXXII.8–13. Philodemus does not elaborate this division of signs. It seems clear, however, that antecedent signs, involving a time factor, apply to temporal sequences and are used in inferences about objects unperceived at the time (*προσμένοντα*). They resemble therefore the signs of early medicine and the other conjectural sciences; and they are very close to Sextus' admonitive signs. On the other hand, the generic and specific signs are probably those used to establish the essential natures

τοῦ πλή[ρου]ς, καὶ τῆς σημειώσε[ω]ς καθ' ἣν [συλ]λογιζόμεθα διότι [τ]ῷδε τῷ φανερῷ τόδε τἀφανὲς ἀκολουθεῖ, προσπίπτοντες τῇ διαφορᾷ τῶν προηγουμένων ἐναργημάτων πρὸς τὰ μὴ δῆλα, περὶ ὧν οἱ συλλογισμοὶ φέρονται, τὸν κατὰ τὴν ὁμοιότητα τρόπον τῆς σημειώσεως ἀθετοῦσιν, ἑκάτερα φύ-

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ροντες εἰς τα[ὐ]τό. τῶν τε ἀδήλων πραγμάτων ἐνίων οὕτως ἀκολουθούντων τοῖς φανεροῖς ὥστε συμπλοκὴν ἔχειν ἰδίαν, ἐπειδὴ γεννήματ' ἐστὶ πάντα τῶν στοιχείων ἢ τῶν ἐξ ἐκείνων ἤ πως ἄλλως συνηρτημ[έ]να, διόπερ ἀνασκευάζεσ[θ]αι καταξιουμένων ἐὰν ἐκε[ῖ]να μὴ τιθῆται, κατὰ τοῦτο συ[ν]τίθεν<τ>αι τὴν τοῖς φαινομένο[ις] τῶν ἀοράτων ἀκολουθίαν. κα[ὶ] κατ' ἄλλον δὲ τ[ρ]όπον ὑπαρχ[ούση]ς ἀκολουθίας, ὥσπερ ὅ[ταν ὁ]μοιότης ἢ ἀναλο[γ]ία[[ι]] τ[ις το]ῖς ὁμοίοι[ς] ἀναλόγοις τ' [ᾖ, τούτων] τῶ[ν] ἀκολου[θιῶν ἀπ]ολ[αύσο]μ[εν· ἀκολ]ούθως [γ]ε το[ῖς π]αρ' [ἡμ]ῖν [σώμ]ασιν, [παρόσ]ο[ν ἀπ]οπά[λλον]ται, καὶ βαρεί[ας] κ[αὶ στε]ρε[ὰς τ]ὰς ἀτόμους ἀξιο[ῦμε]ν τ[ῷ μὴ] δύνασθαι τὰ μὲν παρ' ἡμῖν [το]ιαῦτα νοεῖν τὰ δ' ὅμοια μὴ πεπονθότα τοῦτο. καὶ τότε μὲν ἀπὸ αἰσ-

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XXXVII 15–20 Ph. *R.M.* LXIV, 36.

plenum, and "sign" is also used of the inference by which we reason that this unperceived object accompanies this appearance. Attacking the disparity between the antecedent appearances and the unperceived objects concerning which the inferences are made (i.e., "sign" in the first sense), they reject
XXXVII the method of analogy (i.e., "sign" in the second sense), confusing the two meanings with each other.[102]

Since all things are the products of elements or of things derived from elements, or are related to elements in some other way, there is a peculiar connection between appearances and the unperceived, so that appearances are judged to be denied by contraposition if the elements are not posited. By this principle the consequence of the unobserved on appearances is established. But since there is another relation of consequence, as for example, whenever there is a certain similarity or analogy among similar and analogous objects, we shall make use of consequences of this sort. As a consequence of the fact that bodies in our experience rebound, we judge that atoms are heavy and solid, for we cannot conceive that objects in our experience are of this kind and that similar ones (unperceived) do not have this quality.[103]

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of various classes of objects; they are more metaphysical, and refer to objects naturally unperceived (τὰ φύσει ἄδηλα). They may be correlated with the indicative signs of the Stoics, and they are the primary concern of the present work. In view of a previous statement in XXXII.8–13 we are probably safe in inferring that the Epicureans applied essentially the same empirical method to each kind of sign.

[102] The word "sign" is used in two ways: first of the apparent objects on which inferences are based, and second of the inferences themselves. The Stoics confuse these two usages; for they think that by criticizing the use of certain appearances as signs they invalidate empirical inference.

[103] The Stoics do not realize that there are two types of consequence, only one of which can be tested by contraposition.

θητῶν ἐπ' αἰσθητὰ τῆς μεταβάσεως γινομένης κατὰ τὴν ἀπαραλλαξίαν τότε δ' ἐπὶ λόγῳ θεωρητὰ τοῖς φαινομένοις ἀναλογοῦντα, τοιαύτης δὴ διαφορᾶς ὑπα[ρ]χούσης, παραπέμπουσι τῶν ἀκολουθιῶν τὰς ἰδιότητας, ὡσ[ε]ὶ παραπλησίως ἐπ' ἀμφοτέρων ἑπομένου τῷ πρώτῳ τοῦ δευτέρου, κἂν ἀθετῆται τὸ δεύτερον ἀναιρουμένου καὶ τοῦ πρώτου· διὸ καὶ ῥηθησομένου καλῶς εἴπερ ἔστιν κίνησις ἔστιν κενόν, καὶ

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εἰ κενὸν ο[ὐ]κ ἔστιν οὐδὲ κίνησ[ις] ἔστιν, οὕτως εἴπερ οἱ παρ' ἡμῖν ἄνθρωποι τρωτοὶ καὶ θνητοὶ καὶ οἱ πανταχῆ, καὶ εἰ μὴ π̣άντ' ἔχ[ο]υσιν οἷά φαμ[εν] τὰ παραλ̣[λ]άγματ', οὐδὲ[[ι]] παρ' ἡμῖν ἐπ' ἀμ[φο]ῖν τῆς ἀδιανοησίας ἀπ[α]ραλλάκ[του] καθεστώσης. ἄλλως δὲ καὶ π̣λάττουσιν ἴδια καὶ πολλάκις ἀδύνατα φορῶς τῇ κατασκευῇ τῆς δόξης, καὶ τὰ μυθικῶς ἀπε[σ]χεδιασμένα παρ' ἐνίοις ἀρπ̣άζουσιν, κἂν συγκρούσωσιν [τοῖς οὔσ]περ οἴονται τὰ μὲν π[αρηλλαγ]μένους τῶν ὁμοίω[ν τὰ δὲ] συγκατ[α]τ[ιθ]εμένο[υς, τὴν] ἑαυτῶν [δό]ξαν βεβ[αιοῦν]τες. [ὁ δ]ὲ̣ τα[ύτη]ν καὶ τοι̣[αύτην] τ̣οῦ κατ̣ὰ̣ [τὴν ὁ]μ̣οι̣ότ[ητα τρόπου]

XXXVIII 12–13 ἀρπάζου|σιν D. δο̣[ξ]άζου|σιν G.
18–20 Ph. *R.M.* LXIV, 36–37.

Sometimes the inference is from perceptible things to perceptible things according to complete likeness, and sometimes to things contemplated by reason,[104] which are analogous to appearance. Although there is this difference in inferences, they disregard the peculiarities of the relation of consequence, as if in both cases the second followed from the first in such a way that the first would be denied by the denial of the second. Therefore, the conversion,

> "If there is motion, there is void,"

and

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> "If there is no void, there is no motion,"

will be well stated if it is modelled on the following:

> "If men in our experience are vulnerable and mortal, men everywhere are vulnerable and mortal,"

and

> "If men in unperceived places do not have all the differences that we mention, neither do those in our experience."

The inconceivability is identical in both cases.

Furthermore, the Stoics often invent peculiar and impossible arguments according to the construction of opinion. They seize upon the mythical inventions of some (poets, etc.); while at the same time they disbelieve those (poets) who, they think, have altered some of the myths used by the Stoics, yet who agree (with the Stoics) regarding other myths. In this way they try to strengthen their own belief. But he (Demetrius?)

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[104] λόγῳ θεωρητά—that is, the things naturally unperceived, such as atoms. Here Philodemus distinguishes between inference about objects temporally unperceived, on the basis of identity, and inference about objects naturally unperceived, on the basis of simple similarity. The distinction seems to correspond to the division of signs mentioned in XXXVI.17–21.

καταστ[ή]σα[ς ε]ὐθύνη[ν τῶν] ἀμφισβητούντων πλε[ῖσ]τ[ον] διέστηκεν. τὰ μὲν οὖ[ν] εἰρημένα τοῖς ἡμετέροις κατ[ὰ] το[ῦτο πλ]εῖστον γεγονόσι τοιαῦτ' ἐστὶν οἷα προαπεθεωρήσαμεν· ἃ [δ' ἔ]νιοι τῶν ἰατρῶν περὶ τῆς κα[τ]ὰ τὸ ὅμοιον μεταβάσεως εἶπάν τε καὶ κατέγραψαν ἐν τοῖς τελευταίοις τῆς διεξόδου μέρ̣εσιν, ἂν εὐστομαχῶμέν τε καὶ μηθὲν ἡμᾶς ἀφιστῇ προυργιαίτερον, ἀποψόμεθα.

Frag. I [ ]α[ἠ̣] [τῶν σημ]ειώσεω[ν σ]ύνθεσις [οὐ-] [κ ἀνασ]κευῇ τοῦ [ῇ̣] τόδε το[ῦτ'], [ἀλλὰ μετ]ε<ί>ληφεν διὰ τῶν φαν[τασιῶν] τῶν τὰς χρείας ἀποδι[δουσῶν]. ὁ δέ γ̣' ἀπορῶν, πῶς [κριθήσε]ται [ἡ̣] τῆς διανοίας φαν[τασία, συ]νθετ[έ]ον τὰς σημει[ώσεις οἴ]εται, ἐὰν ἐπιμαρτυ[ρῆ-] [ται διὰ τῆ]ς ὄψεως μήτε τοῖς [π]α[ροῦ-] [σιν, ἃ κριτ]ήρια λέγεται τ[ῶν ἀδή-] [λων κα]τὰ τὰς αἰσθήσεις καὶ [προλήψεις κ]αὶ τὰς [φα]νταστικὰς [ἐπιβολὰς τῆς διανοί]ας καὶ τ[ὰ] [πάθη, ἀντιπίπτῃ].

II [οὐ δεῖ δ' ἐφίστασθαι τῶν ἐπιδή-] λων, ἀλλ' ἀπὸ τούτων τεκμηριοῦσθαι περὶ τῶν ἀφ[α]νῶν, μήτ' ἀπιστεῖν τοῖς δι' αὐτῶν κατὰ

Frag. I Ph. *R.M.* LXIV, 12.
II [οὐ δεῖ . . . ἐπιδή]|λων Ph. *R.M.* LXIV, 12.
1–10 G.

who has established a test of controversies by the method of analogy differs (from the Stoics) in the highest degree.[105]

The things said by the members of our school who have spent the most time in this study are such as we have already considered. What some of the physicians [106] have said and have written about the method of analogy we shall now take note of in the last parts of the exposition, if we have the stomach for it and if nothing more important hinders us.

Frag. I The construction of inferences is not established by contraposition of the argument "in so far as this is such," but by appearances which give the necessary evidence. Indeed, even if one does not know how mental perception [1] will be judged, he [2] thinks that inferences from signs should be constructed if they are verified by observation and do not conflict with present appearances, which are called the criteria of the unperceived: namely, perception, anticipations, mental perceptions, and feelings.[3]

II One ought not to stop with the apparent, but from the apparent make inferences about the unperceived; nor mistrust

[105] Philodemus attacks the Stoics for using mythology for evidence in philosophical disputes.

[106] Philodemus here refers to the empirical physicians who used the method of analogy. The Epicureans owed much to medical empiricism; cf. below, 121–123.

[1] "Mental perception" is a special kind of non-sensory cognition employed by the Epicureans in their theology.

[2] Philippson suggests that the reference is to Zeno—*Rhein. Mus.* LXIV (1909), 12.

[3] On the Epicurean empirical criteria, cf. Diog. Laer. x.31. On the whole, this fragment is very close to the main text of the treatise, *On Methods of Inference.*

τὴν ὁμοιότητα παραδεικνυμένοις, ἀλλ' οὕτω π[ισ]τεύειν ὡς καὶ τοῖς ἀφ' ὧν ἡ [σημείωσις]. τὸν αὐτὸν τρόπον [καὶ τ]ὰς γενικὰς καὶ τὰς εἰδ[ικὰς] τῶν σημείων παραλλα[γὰς καθ' ἕ]καστον ἀναγκαίως [διίσ]ταμεν· καὶ γὰ[ρ τὰ]ς γεν[ικὰς ὁμοιό]τ̣ητα[ς] θηρε[ύομεν].

III *[δεῖ δὲ διὰ τῆς καθ' ὁμοιότητα σημειώ]σεως ἢ δι[ὰ τῆς ἀνα]λογίας συλλογίζε[σθαι] μήτ' οὐδὲ ταύτης οὔσης ἀφίσ[τα]σθαι τῆς μόνης ἐκ τῶν πραγμάτων διδομένης ἀναλογίας. ἔτι δ[ὲ τ]ὰ μὲν τοῦ εἶναί τι[ν' ἐ]ν τοῖς ἀ[δήλ]οις τιθώμεθα ση[μεῖ]α τὰ δὲ [το]ῦ τοι̣αῦτ' εἶναι τὰ [δ]ὲ τοῦ μ[ὴ ὑπ]άρχειν τὰ δὲ τ[οῦ] μὴ τοιαῦ[θ' ὑ]πάρχειν· καὶ μὴ διὰ τῶν ἐνη[λλ]αγμένως σημαιν[όν]των ποι[ώμ]εθα τοὺς συλλογισμούς. ὡσα[ύ]τως δὲ καὶ τὰ κατ' ἀ[νασκευὴν τατ]τ̣όμ̣ενα σημεῖα [οὐκ ἐπάγομεν, εἰ] μὴ [κ]ατὰ γεννή[ματα τῶν φύσει ὄντ]ων ἀδήλ[ων], [ἐφ' ὧν ἐκ τῶν φανερῶν ποι]ούμε[θα τὴν σημείωσιν].*

IV *χρησθ[ῆν]αι προαποδ[εδειγμέ]νοις, [ἔτι] δ' ἑξῆς π̣[ᾶσι τοῖς]*

10–12 [διίσ]ταμεν· | . . . | θηρε[ύομεν] Ph. *R.M.* LXIV, 12.

III [δεῖ δὲ . . . σημειώ] | σεως Ph. *R.M.* LXIV, 13.
1–12 G.
5–6 τι | [ν' ἐ]ν Ph. *R.M.* LXIV, 13. τι[ν] | [α ἐ]ν G.
12–17 τὰ κατ' ἀ | [νασκευὴν] . . . [σημείωσιν] Ph. *R.M.* LXIV, 13.

IV 1–12 Ph. *diss.* 8.

the facts proved through apparent objects according to analogy, but trust them just as one trusts the facts from which the inference is made. In the same way, we necessarily differentiate the generic and specific differences of signs in each case. For we are searching for the generic similarities.[4]

III We ought to reason through inference according to similarity or through analogy; and this being so, we should not depart from the analogy that is furnished by empirical facts. Further, let us posit some things as signs of the existence of unperceived objects, some of a determinate existence, some of non-existence, some of the absence of a determinate existence; and let us not reason from things whose signification varies. We do not infer from the signs tested by contraposition, except in the case of things unperceived by nature about which we make inferences from the apparent.[5]

IV We should use previously demonstrated facts, together with

[4] This fragment appears to be taken from a defense of inference from "homogeneous" signs. See above, xviii.17–xix.4 and 107, note 101.

[5] Fragment iii adds little new material, except that inductive inference may be used in a negative way, as well as in a positive way. The text of the last four lines restored by Philippson is very uncertain. It seems to refer to the Stoic method of inference and not to the Epicurean; yet Philodemus sometimes speaks as if he accepted the method of contraposition as supplementary to the method of analogy.

διὰ πείρας εἰλημμέν[οις ἐπι-]
λογισμοῦ σπουδαζο[μέ]ν[ου]
μήτε χωρὶς ἐπιλογισμ[οῦ].
[κ]αὶ τοῖς δεομένοις κ[ριτηρί-]
[οις] πρὸς τὸ μήτε γ[ιγνώσκειν]
[ἐ]πί τινων προσμένο[ντα ἡ-]
[γ]εῖσθαι τῷ μὴ ἀντιμ[αρτυρῆ-]
[σ]αι μήθ' ὡς ἄδηλα φύσ[ει νο-]
[εῖ]σθαι τὰ δι' ἐπιμαρτ[υρήσε-]
[ως λαμβ]άνεσθαι δυ[νάμενα].
[τὰ] δὲ συνεχῆ πρὸς τὸ [μή τινα]
[ν]ομίζειν ἐναργῆ διὰ [τὸ μὴ]
[φύσει φαίνεσθ'] ἄδηλα κα[ὶ φύσει]
[τιν' ἄδηλα διὰ τὸ μὴ] ἐναργ[ῆ φαί-]
[νεσθαι].

V

a	b
[φαν]ṭασία[ ]	
[ ]ḍια[σ]τέλḷετα[ι]	
[ ]ὅτι σημαίνε[ι]	
[δυ]νατὸν δεῖξ[αι]	
[ ]φaṿτάσμaṭ[α]	*καὶ ὁ πυ[θό] | [μενος]*
[ἐσ]τιν καὶ τόδε τι ἐ[ν τοῖς ἀδή-]	*ἐνḍ[ε]ίξε[ι]*
λοις ὑπάρχει· τὸ δ[ ]	
[ἀ]δύνατον αὐτῇ τ[ῇ τῆς δια-]	*[τῆ]ṣ δια[νοί]ας*
[νο]ίας φανταστιḳῇ [ἐπιβολῇ]	*καθ' ἃς*
[ἐ]ṿαργὲṣ κα[ὶ] μ[η]θὲν[ ]	
[ ]ἐνά[ρ]γημα συṿπ̣[αρακολου-]	
[ ]	
[ ]ἄδηλον[ ]	

VI *ὁ μν[ημονεύων] σὺν τούτῳ [γ]ε[ί-]*
ṿẹ[σθαι τὰς τῆ]ς διανοίας φαν-
τασία[ς σὺν τῷ μὴ] διὰ τῶν αἰσθήσε-

13–17 Ph. *R.M.* LXIV, 14.
V Ph. *R.M.* LXIV, 14–15.
VI Ph. *R.M.* LXIV, 15.

all facts derived from experience, in serious inductive inference, and not apart from inductive inference. And we should use the proper criteria, so that we shall not in any case think that we know objects temporally unperceived by the absence of conflicting evidence, and so that we shall not think that things which are subject to verification are unperceived by nature; and further, so that we may not consider a thing apparent on the ground that it does not seem to be unperceived by nature, or unperceived by nature on the ground that it does not seem to be apparent.[6]

V (Too fragmentary to translate)

VI He who recalls that mental perceptions occur in this circum-

[6] This fragment was apparently part of a discussion of the difference between objects unperceived at the time (προσμένοντα), and objects unperceived by nature (τὰ φύσει ἄδηλα). See below, 142.

ω̣ν κα[ὶ τῶν πα]ρ̣όντων αὐτὰς γεν̣-
νᾶσθ[αι, εἴ]τε̣ ὑπ̣' ε[ἰδώ]λων τ[οῦτ']
ἢ κ̣εν[όν] τι τὸ γεν[νηθέν], ἀμφ[ίβο-]
λον ε[ἶν]αι λέγων, [δείξ]ει ταύ-
[τας οὐ]χ ἃς φαί[νεσθ' ὑπάρχειν],
εἴ[τ]ε α[ὐτομά]τω[ς φύντα εἴτ' ἔκ-]
γον[α ὄ]ντ[α] να[στῶν τὰ εἴδωλα],
δυν[ατ]ὸν εἶν[αι, ψευδεῖς δὲ]
οὐ δ[υνατόν ἔλα-]
βεν [ὀ]ρθῶς [ ]
νομ[ ]

VII a	VII b
[τὰ]ς αἰσθή[σεις]	[εὑ]ρεῖν ψ[ευδεῖς]
[εἴλη]πτα̣ι	[χρησί]μως δήπ[ου]
[ἐπ]ιβολὰς	ἢ τῇ τῶν
[ἀπ]ο[ρ]ροα	ὁμοιότητι
	[ὑπ]οπίπτοντ-
	[χ]ρείας διατειν-
	ἐπειτ-
	[συ]μπάντω[ν]
	τὰς φαν[τασίας]
	ὁ πᾶν νο̣[ῶ]ν
	δειν

VIII

[τὴν τῶν θεῶν ἐπί-]
[νοια]ν δεῖν ἐπανάγε[ιν ἐπὶ τὰ]
[πε]ριληπτικῶς τῇ [διανοίᾳ γι-]
[νό]μενα κατε[ν]αρ̣[γ]ή[ματ', ἃ δια-]
[σαφ]εῖ προφαν̣ῶ̣ς τὸ δ[αιμόνια]
[καὶ] ἀίδια [ζῷ̣α εἶναι].

VII Ph. *R.M.* LXIV, 16.
VIII Ph. *R.M.* LXIV, 16.

stance, namely, apart from perceptions and present objects, and he who says that it is doubtful whether this occurrence comes about through images or is illusory, will not prove that these perceptions are not what they appear. Images can exist either by chance or as products of solid bodies, but they cannot be false.[7]

VII (Too fragmentary to translate)

VIII We should refer our notion of the gods to the revelations which take place by mental perception and which guarantee clearly that heavenly and eternal beings exist.[8]

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[7] Here Philodemus is again discussing mental perceptions, treating the problem of the truth of images.

[8] This fragment apparently deals with the application of mental perception to knowledge about the gods.

CHAPTER IV

The Sources of Epicurean Empiricism

Many systematic philosophies have been greatly influenced by science in the formulation of their methods. Philosophers often try to generalize a scientific method to handle the problems of philosophy. The early Greek philosophers adopted the method of mathematics as a model of their thought, and as a result they constructed their philosophical systems deductively from certain fundamental principles which they accepted as self-evident. Plato's philosophy shows clearly the influence of contemporary mathematical science, and both Peripatetics and Stoics were influenced by the rationalistic procedure of the mathematicians.

The systems of philosophy based on the methodology of the empirical sciences did not appear until the Hellenistic period. The foremost of these was the Epicurean philosophy, which stressed a thoroughgoing empirical method in opposition to the rationalistic approach of the Stoics. The Empirical Sceptics also formulated an empirical method and a phenomenalism in direct contrast to rationalistic methodology and dogmatic metaphysics. Just as the Greek rationalists were influenced by mathematics, the empiricists adopted and generalized the methodology of the ancient empirical arts and sciences.

Greek empiricism was pragmatic in origin. It grew out of the practical arts which required a reliable method for the acquisition of useful knowledge. Throughout the course of its long history it established contacts with almost every science or formal discipline that was known to the Greeks. Empirical investigation doubtless began long before the earliest preserved records of ancient science; and even in historical times the works of many empirical investigators have been lost without record. Yet as early as the fifth century B.C. the

empirical procedure had been advanced and refined to such a point that it was explicitly contrasted with non-empirical methods of inquiry. The explicit formulation of empirical method found in ancient writings on arts and sciences provides tangible evidence for the ancient empirical tradition.

Empirical method was first formulated in ancient medicine.[1] The works of the Hippocratic corpus, dating from the fifth to fourth centuries B.C., give a systematic and detailed expression of the nature of empirical science. The early empirical physicians realize the need for careful observation,[2] and they consider perceptible objects the starting-point of their science.[3] The limitations of empirical knowledge are also recognized. Sometimes the physician tends toward scepticism, emphasizing the uniqueness of each case that comes before him and despairing of finding any common elements which may be used in passing from one case to another. He contrasts the absence of fixed theory in medicine with the regularity and uniformity in the art of writing; for in the latter case one who masters the basic principles knows all there is to know about the subject.[4] The sceptical approach to medicine is also characterized by an anti-metaphysical point of view and a criticism of reason as the instrument of knowledge. Those theorists who say that man is all air, or all fire, or water, or earth, or anything else that is not apparent in man, do not deserve serious consideration. Such theorists do not even agree among themselves, in spite of the fact that they all use the same kind of arguments. No one of them can establish his view more securely than the others, and in the end they refute themselves through their own ignorance.[5]

[1] G. Senn, *Die Entwicklung der biologischen Forschungsmethode in der Antike*, has found traces of empiricism before the Hippocratic writings; yet there is no evidence that these earlier empiricists tried to formulate their method.

[2] See below, note 8.

[3] *On Art* 2.

[4] *On the Parts of Man* 41. Prof. L. Edelstein called our attention to this passage.

[5] *On the Nature of Man* 1.

At other times, however, the empirical physician formulates a method by which he establishes empirical generalizations applicable to the particular cases with which he must deal. He remembers previous cases similar to the present, so that he can recall the treatment by which the previous cases were cured.[6] He familiarizes himself with the signs or symptoms which indicate improvement or the opposite, so that he may give a correct diagnosis and predict with assurance.[7]

Empirical method so formulated is based not on a dogmatic theory of causation, but on the observation of certain signs which in our past experience and in records of the past have regularly preceded or accompanied or followed certain other phenomena which we may say they signify. Thus the method is based on the observation of similarities and differences within experience,[8] and the formulation of theories on the basis of these which will permit the inference of certain sequences and the use of treatment accordingly. Even causes may be determined empirically. The cause of a given disease, for instance, must be something common to the mode of life of all who suffer from the disease. If one disease attacks at one and the same time many people, young and old, men and women, drinkers of water and of wine, eaters of barley and of wheat, those who work hard and those who work little, the cause of the disease cannot be the particular mode of life of any of these men, but an element common to all; namely, the air that they breathe.[9]

In observing and recording the similarities and uniformities of perceptible phenomena, the early empirical physicians used appearances as signs of imperceptible things. The physicians found that relatively few diseases can be observed directly. The majority of diseases, being internal and unobservable, are known only by auxiliary means. Clearness or roughness

[6] *On Art* 7.

[7] *Prognostic* 25.

[8] *On Surgery* 1.

[9] *On the Nature of Man* 9.

of voice, heaviness of breath, and bodily discharges are used as signs of the patient's condition.[10]

The view that the observable facts of experience may be used as signs of the nature of things that lie beyond experience leads, in its extreme form, to a dogmatic empiricism. The belief is expressed that medicine, and only medicine, can give us knowledge of nature. The study of medicine is a far more reliable method of knowing the nature of man than the speculations of such philosophers as Empedocles.[11] By combining many perceptions through memory, the physician can establish reason (λόγος) and hence make systematic inferences from appearances. These inferences are not merely probable, but certain.[12]

It is clear that in the Hippocratic corpus there is great variation in the formulation of empiricism; but in general three types may be distinguished and classified more or less arbitrarily as follows:

1. Sceptical empiricism, which holds that the scientist can know nothing beyond perceptions. This view reduces science to mere experience and practice, without the formulation of any theoretical principles.

2. Methodological empiricism, which holds that by a rigid application of method the scientist may formulate generalizations and inferences which are highly probable, but not necessarily true.

3. Dogmatic empiricism, the view that the scientist is able to derive from perception universal and necessary truths.

These three types, though not always sharply distinguishable, are used here as a convenient division for the discussion of ancient empiricism. The subsequent development of empiricism in Greek science and philosophy is forecast by these varying formulations of empiricism found in the Hippocratic corpus. The earliest reaction of philosophy to empiricism

[10] *On Art* 9, 11.

[11] *On Ancient Medicine* 20.

[12] *Precepts* 1.

seems to have been that empiricism can never progress beyond scepticism. Most of the Pre-Socratics, of course, had already attacked perception as inadequate for the attainment of knowledge;[13] and the Sophists who, like Protagoras and Gorgias, rejected reason in favor of immediate sense experience, found themselves involved in an epistemological solipsism that made knowledge all but impossible.[14] Yet even some of the Pre-Socratics believed that appearances may be used as indications of the imperceptible;[15] and according to Plato's dialogues both Protagoras and Gorgias recognized the positive value of empirical observation in the practical arts. In *Gorgias* 448C Polus, the follower of Gorgias, states that art is based on ἐμπειρία, empirical investigation. In the *Theaetetus* Protagoras is represented as saying that the physician and farmer and sophist are differentiated from other men by their ability to control and alter appearances.[16]

Plato's evaluation of empiricism, being subsequent to the formulation of empirical method in the science of medicine, is much less ambiguous and indecisive than the treatment found in the earlier philosophers. Plato is more fully aware of the issues involved; consequently his criticisms of empiricism are much more explicit. In the *Republic* he expresses his disdain of those who merely observe appearances, noting what things precede, follow, or accompany other things, and who attempt to predict the future from memory of the past:[17]

> "Now suppose they had rewards and honors there for one another, and prizes for the man who had the keenest eye for a passing image, and who remembered best which images habitually came first, which last, and which of them came together, and who was thus ablest in divining which was about to come;

[13] Cf. Sextus *Adv. Math.* VII.89–140.

[14] Cf. *ibid.* VII.60–87. At a later time the Cyrenaics adopted a similar view, *ibid.* VII.190–195.

[15] E.g. Anaxagoras and Democritus; see *ibid.* VII.140. Cf. H. Diller, "Ὄψις Ἀδήλων τὰ Φαινόμενα," *Hermes* LXVII (1932), 14–42.

[16] *Theaet.* 167A–C.

[17] *Republic* VII.516C–D. The translations quoted in this and the following chapters are our own.

do you think that our friend is going to long for those rewards, and that he will be envious of persons who are honored there, and are in power? Will he not rather have the feeling Homer tells of, and desire exceedingly

'To drudge on earth above as hireling to another,
Lodging with a landless man,'

and be ready to endure all else in preference to having those opinions and living a life like that?"

In the *Phaedo* Plato rejects the empirical view that knowledge arises from memory of many perceptions.[18] In the *Gorgias* he says that those arts which rest on empirical observation are merely conjectural, for they know neither the cause nor the value of what they do.[19] He contrasts with them the true arts, which proceed from a knowledge of causes and of the good. In the *Laws*, 720A–E, he makes an analogous distinction between the medicine of free men and the medicine of slaves. Likewise in the *Phaedrus* he contrasts the true and the false methods in rhetoric and medicine. The true method is based on a knowledge of causes and forms, the false method rests on mere familiarity and experience.[20]

The contrast between the mathematical arts and the arts resting merely on observation and experience plus careful conjecture is elaborated in the *Philebus*: [21]

"If from all the arts one should separate arithmetic and metric and the art of weighing, the remainder of each art would become inconsiderable. . . . For after that nothing would be left but probabilities and the careful study of perceptions through experience and a certain familiarity, and the use of the powers of conjecture, which many call arts, since they have acquired their strength by care and toil. . . ."

The conjectural arts, which Plato considers far meaner and less exact than the mathematical, include music, medicine, farming, navigation, and military science. The arts of build-

[18] *Phaedo* 96B.
[19] *Gorgias* 465A; 500E–501B.
[20] *Phaedrus* 269E–272B.
[21] *Philebus* 55E–56D; cf. *Republic* 533B–C. This is our own translation.

ing and arithmetic typify the exact arts. From these passages it is clear that Plato believes that merely empirical investigation cannot give rise to scientific knowledge.[22]

Aristotle's attitude toward empirical method is more favorable than Plato's; for though Aristotle denies that empirical observation alone is adequate for knowledge, yet he does regard perception as the starting-point of all knowledge. In one passage he says that each sense organ has its distinctive objects of perception, and in regard to these objects it never errs.[23] In the *Metaphysics* he traces the origin of art and science to experience and memory. The observation and memory of what is beneficial to a number of persons suffering from some disease provide the ground for a generalization about the cure of that disease. Experience is knowledge of particulars, while art is knowledge of the universal; yet knowledge of the universal is derived from the determination of similarities in a number of particular cases.[24] In the *Topics* Aristotle describes the method of deriving the universal from the particular as the observation of the similar; and he asserts that this method is useful in inductive arguments, in hypothetical syllogisms, where inference is made from one group of objects to other objects that are similar, and even in the formulation of definitions.[25]

In spite of such statements as these, Aristotle does not formulate his own scientific method in purely empirical terms. He says that science requires the use of both reason and perception, and only once does he indicate that perception is the ultimate test.[26] In the absence of rational explanation he refers to an empirical generalization merely as a probable conjecture.[27]

[22] This does not mean that Plato failed to recognize the need for observation. In several passages, e.g. *Phaedrus* 249B–C, he indicates that perception contributes to a knowledge of the Ideas.

[23] *De Anima* 418a.7–16; cf. 427b.11–14; 428b.18–19.

[24] *Metaph.* A.1, 980b.28–981a.12; cf. *Post. Anal.* 81a.38–b.9; 97b.7–25.

[25] *Topics* I.108b.7–23.

[26] *De Gen. Animal.* III.760b.27–33.

[27] E.g. *Hist. Animal.* VI.571a.26–27.

Aristotle regards empiricism as inadequate because he believes that observation can never give necessary connections between objects. In the absence of causal knowledge the empirical scientist must base his knowledge on a study of signs, and inferences from signs are not reliable except in cases where the inferences may be converted into valid syllogisms. He says in one place that a science of physiognomy would be possible only if an invariable correlation could be established between physical qualities and mental traits, for instance between large extremities and courage. In that case one could infer syllogistically from the physical qualities as signs to the mental traits.[28] Especially significant in this connection is Aristotle's treatment of empirical method in rhetoric. Since rhetoric, according to Aristotle, is not concerned with truth, but only with conjecture of the probable or persuasive,[29] this art may employ empirical arguments. For example, the orator should study matters of state finance both from his own empirical observation and from the records of the experience of others.[30] The principal form of empirical argument that Aristotle attributes to rhetoric is the argument from signs and examples. Signs refer to the things they signify either necessarily or not necessarily. In the former case they can be converted into a syllogism of the first figure and are not entirely empirical. In the latter case they are asyllogistic and therefore refutable. An argument from example is an induction from one particular to another particular of the same genus.[31]

Though Aristotle recognizes that observation is the ultimate source of knowledge, he believes that knowledge can be obtained only through a combination of observation and reason. Like Plato, he constructs and defends his philosophical system

[28] *Prior Anal.* II.70b.7–38.

[29] In *Rhet.* I.1355a.17 Aristotle uses of rhetoric the phrase, πρὸς τὰ ἔνδοξα στοχαστικῶς ἔχειν.

[30] *Rhet.* I.1359b.30–33.

[31] Cf. *Rhet.* I.1357a.32–b.36; *Prior Anal.* II.70a.3–38.

on non-empirical grounds. He limits the use of empirical method to those fields of science and philosophy where certain and demonstrative knowledge cannot or need not be attained (e.g., rhetoric and biology).

There are indications that some of Aristotle's students were more receptive to empiricism. G. Senn has found in Theophrastus' later works a definite preference for observation over reason, though Theophrastus gives little in the way of formulation of empirical principles.[32] Likewise, W. Jaeger has shown that there was a tendency among the Peripatetics to integrate empirical observation with philosophic method.[33] It must be recognized, however, that the Peripatetics never freed themselves entirely from the influence of dogmatic rationalism.

A closer tie with empirical sciences is found in some of the more obscure philosophers of the fourth century, especially Nausiphanes the Democritean. Nausiphanes wrote a work entitled the *Tripod*, in which he probably set forth the three basic principles of empirical methodology: observation, history, and inference from similar to similar.[34] His application of these principles to the art of rhetoric is recorded in Philodemus' *Rhetoric*. Nausiphanes holds that the method of rhetoric is the same as the method of all the other arts and sciences, namely, the inference of the unperceived from the perceived by means of signs. He says that an argument is always useful from apparent and present things to future things, and the most able leaders of democracy, monarchy, or any other government use this kind of argument.[35] In another passage which refers to Nausiphanes Philodemus states the view that rhetoric is the power "according to which *from practice and history* of the affairs of a state one can see well what is beneficial

[32] *Op. cit.*, 99 ff.

[33] Jaeger, *Diokles*, 25–30, 55–59, 224–236. In his chapter on the "Organization of Research" in *Aristotle*, 324–341, Jaeger points to a shift in Aristotle's later works toward empirical investigation.

[34] See Philippson, *De Philodemi Libro*, 52–53.

[35] Philod. *Rhet.* II.38–39.

to the majority."[36] Nausiphanes' emphasis on empirical method is further indicated in a passage where he states that the rhetorician must use systematic inductive inference, and not depend on isolated experiences.[37] Following Aristotle, he says that the rhetorician bases his arguments on signs and examples; he goes further than Aristotle, however, in saying that the rhetorical method of inferring from appearances is no less cogent than philosophical method.[38]

Epicurus' empiricism seems to spring from the teachings of Nausiphanes, Aristotle, and the empirical physicians.[39] In the absence of detailed information it is impossible to say exactly what doctrines Epicurus took from each of these sources; yet these sources contain striking parallels to Epicurean teachings. In the works of Aristotle, for instance, we find precedents for Epicurus' statements that all perceptions are true, and that all knowledge is derived ultimately from perception;[40] the early physicians anticipated Epicurus' use of perceptible objects as signs of the unperceived; and Nausiphanes' formulation of the method of valid inductive inference is very close to the Epicurean position.

The interest in empiricism continued to spread after the death of Epicurus, and the later Epicureans, including Philodemus, were strongly influenced by the later developments in the empirical tradition. The Empirical School of medicine

[36] *Ibid.* 242–243.

[37] *Ibid.* 47.

[38] *Ibid.* 35–37, 40–41, 45. For further material on Nausiphanes see Pauly-Wissowa-Kroll, *R.E.*, *s.v.* "Nausiphanes," XVI.2021–2027 (von Fritz), and H. Diels, *Die Fragmente der Vorsokratiker* II.246–250.

[39] Cf. Philippson, *De Philodemi Libro*, 43–57. Pyrrho, who was a teacher of Nausiphanes and who was admired by Epicurus, did not exert any influence on Epicurean logic or epistemology. For a more detailed exposition of Epicurean empiricism, see Chap. V.

[40] In his *L'Aristotele Perduto e la Formazione Filosofica di Epicuro*, I.40 Bignone holds that Epicurus could not have known the treatises of Aristotle that are extant today; yet even if Bignone's argument is correct, there is no reason to believe that Epicurus could not have learned of the empirical tendencies in Aristotle's thought from some other source, such as oral reports or written works of Aristotle's pupils.

was established in the third century B.C., and although our information about this school comes from much later writers, primarily Galen, we may be reasonably sure that from its inception it advocated an empirical methodology.[41] According to Galen's account, the three basic principles of the Empirical School were direct observation, records of previous observation, and inductive inference from similar to similar.[42] Some of the technical terms used by the Empirics are identical with those in Philodemus' works,[43] and Philodemus' acquaintance with the Empirics is attested by his reference to them in the conclusion of the *Methods of Inference*.

Yet the physicians were not the only scientists in Hellenistic times who were interested in formulating an empirical methodology. Almost all of the arts and sciences show some influence of the empirical tradition. Perhaps the most important after medicine was the art of rhetoric, which had already become involved in the controversy over the value of empiricism.[44] Plato, Aristotle, and Nausiphanes all recognized that the rhetoricians used empirical arguments. Many later rhetoricians were impelled toward a study of method as a means of defending themselves against Plato's charges that rhetoric is only a pseudo-science. The empirical method which they formulated passed on from rhetoric into philosophy and the other arts.

After Aristotle the controversy over rhetorical method gave rise to three main points of view. There were, on one side, those who accepted the judgment of Plato and, like Antonius in Cicero's *De Oratore*, were content to maintain that rhetoric is merely a matter of experience and practice. Opposing these were the "philosophical" rhetoricians who held that rhetoric

[41] The best work on the Empirics is K. Deichgräber, *Die Griechische Empirikerschule*. See also Philippson's review of this work, *Philol. Woch.* LI (1931), 1201–1213.

[42] See Galen, *Subfig. Emp.* (ed. Bonnet), 39.

[43] E.g. ἐπιλογισμός, μετάβασις καθ' ὁμοιότητα.

[44] Cf. P. and E. De Lacy, "Ancient Rhetoric and Empirical Method," *Sophia* VI (1938), 523–530.

requires universal knowledge. A third group was formed by the rhetoricians who were convinced that rhetoric had a scientific empirical method—not so rigorous, perhaps, as the method of mathematics, but at least as good as the method of most of the other arts and sciences. Our information about these champions of rhetorical method is very inadequate; at best we can only outline their position in general terms.

The empirical rhetoricians took from Aristotle their initial orientation: They agreed that rhetoric was based on empirical observation and probable arguments from signs. As Philodemus states their position, they held that in rhetoric "there is a particular sign of what is to follow, just as in the case of diseases physicians have signs, and navigators in questions relating to sailing in storms." [45] The inference from signs is, of course, not infallible, but if it is based on sufficiently broad empirical observation it will be highly probable: "Just as the physician knows the probable outcome in the case of diseases and the navigator in the case of storms, so the rhetorician knows what will probably happen in the case of the state." [46]

Thus rhetorical method was both empirical and positivistic, and as such it was known technically as the method of conjecture (στοχασμός). The use of conjecture had been previously mentioned in the Hippocratic corpus,[47] and Plato had attributed conjecture to rhetoric in a rather depreciatory sense.[48] Furthermore, in the *Philebus* Plato had divided the arts generally into those which have an exact mathematical method and those that are merely conjectural.[49] The rhetoricians accepted the distinction between exact and conjectural sciences, and they placed rhetoric in the latter group. Here again the evidence is mostly from Philodemus' *Rhetoric*. Philodemus

[45] Philod. *Rhet.* I.369. The translations of the passages from Philodemus are our own.

[46] *Ibid.* 373.

[47] See below, 132–133.

[48] *Gorgias* 464C.

[49] *Philebus* 55E–56B.

quotes the following passage from Alexinus, the Megarian philosopher:

> "A rhetorician would agree that they (i.e., the rhetoricians) try to make the same kind of arguments about the good and most other things as those by which philosophical questions are judged; and even if they do not all proceed according to exact science, yet it is possible that the judgment of orators is according to a theory of probability and conjecture." [50]

In another place the view that rhetoric is a conjectural art is attacked by Philodemus:

> "Epicurus wrote . . . that it (rhetoric) does not employ observation of what usually happens or make conjectures according to probability." [51]

From an independent source we know that Athenaeus, a rhetorician of the second century B.C., maintained the position that Philodemus here attacks:

> "Athenaeus calls rhetoric the power of argument which conjectures what is persuasive to the audience." [52]

The rhetoricians insist that conjecture is the method not only of rhetoric but of all empirical sciences:

> "Not every artisan, if he is wise, claims that he will achieve his end in every case; neither the physician nor the navigator nor the archer nor in brief any of those who practice not exact, but conjectural sciences. Accordingly, either we must not call the others arts, or rhetoric is an art also." [53]

The rhetoricians continually appealed to medicine, which Plato in the *Philebus* had called conjectural, but which certainly had a method. Analogies occur very frequently in Philodemus between rhetoric and medicine.[54] It is probable that the rhetoricians took their conjectural method from

[50] Philod. *Rhet.* Suppl. 40.

[51] *Ibid.* 27–28.

[52] Sextus *Adv. Math.* II.62.

[53] *Rhet.* Suppl. 14.

[54] E.g. *ibid.* 12, 13, 14, 16, 27, 32. Plato, of course, had compared them in the *Phaedrus* and the *Gorgias*.

medicine; for even in the early Hippocratic work *On Ancient Medicine* the use of conjecture is discussed, and the fallibility of this method in medicine is recognized.[55] To be sure there is no evidence that the rhetoricians used precisely this passage; yet it is very likely that they derived some parts of their formulation of conjectural method from medical writers. Likewise the rhetoricians admit the restriction that the propositions of a conjectural art are only probable—they may on occasion be wrong; yet this, they say, is no more true of rhetoric than of medicine.[56] Hence the rhetoricians, while renouncing a completely rigorous method, maintain that they do have the same method as the other sciences, and that this method is basic in all empirical science.

The Epicurean Bromius, a contemporary of Philodemus, was perhaps unique in believing that rhetoric has a rigorous and infallible empirical method:

> ". . . the good politician has inferred by induction the things naturally capable of arousing anger and pity and attraction and aversion, and he uses these expertly." [57]

Thus the method of conjecture is at once empirical and positivistic. Conjectures are probable inferences or predictions from our own observations and records of the past; and these conjectures are made by means of signs. Arguments from signs were discussed in practically all of the ancient works on rhetoric;[58] and Hermogenes in the second century A.D. defined conjecture as an argument of this type:

> "Conjecture is the substantial proof of an unknown fact from some apparent sign." [59]

[55] *On Ancient Medicine* 9. Prof. L. Edelstein called our attention to this passage. Jaeger (*Diokles*, 45–48) believes that this empirical element in Hippocratic medicine influenced Aristotle's ethics. In later times Celsus said that the method of medicine is conjectural: *Medicina* I, Proemium; II.6.

[56] Cf. above, note 53.

[57] *Rhet.* Suppl. 32–33.

[58] Cf. G. Thiele, *Hermagoras*, 125–131

[59] Hermogenes *De Statibus* 2.11.

A specific application of the conjectural method may be found in a passage of the *Rhetorica ad Herennium*, which prescribes the method of argument in what is called a conjectural case, that is, a legal case where the point at issue is a question of fact.[60] The conjectural method outlined there is nothing more than the systematic inference from empirically known facts to some fact that is not directly known. The result of the conjectural method, the passage states, is probable, not necessary; [61] yet there are degrees of probability, and if all of the various signs from which the inference is made are shown to agree, the conclusion appears practically certain.[62]

The rhetoricians differentiated degrees of probability according to the amount and consistency of the available evidence; just so the physicians recognized that the degree of probability depended on the confluence of signs or symptoms.[63] These scales of probability are very similar to the Carneadean analysis of probability.[64] Sextus specifically compares the Carneadean system with medicine,[65] and doubtless Carneades drew his inspiration here from the empirical sciences. The Epicurean position is somewhat different; for the Epicureans held that while some empirical inferences are only probable, others (e.g., their own metaphysics) are absolutely certain.[66] Hence they must be classed as dogmatic empiricists.

The method of conjecture received its most detailed formulation in rhetoric, yet it is found in essentially the same form in a number of other arts and sciences. Cicero tells us in the *De Divinatione* that divination makes conjectures by means of probable arguments from signs. These signs are not based on knowledge of causes, but on the observation that in the past

[60] *Rhet. ad Herenn.* II.3–10; see P. and E. De Lacy, "Ancient Rhetoric and Empirical Method," *Sophia* VI (1938), 527–528.

[61] *Rhet. ad Herenn.* II.10.

[62] *Ibid.* 11.

[63] Galen *Subfig. Emp.* (ed. Bonnet), 55; Sextus *Adv. Math.* VII.179.

[64] Sextus *Adv. Math.* VII.175–184.

[65] *Ibid.* 179.

[66] Cf. *Meth. of Inf.* VII, XXXV–XXXVI.

the same sequences have always, or almost always, occurred in the same way.[67] Even Polybius says that military strategy requires empirical method, and that historians can predict the future by conjecture from the records of the past.[68] In quite a "modern" tone he states that empirical studies have progressed so far that the scientists can handle methodically almost everything that occurs.[69]

The astronomers, also, were familiar with the traditional formulation of empirical method. Ptolemy tells us that the astronomy of Hipparchus was largely conjectural[70] (though he insists that his own is not conjectural, but certain), and Sextus Empiricus admits the astronomy of Eudoxus as a legitimate empirical science.[71] The astronomers carefully avoided metaphysical speculations, claiming that they were interested only in observing the heavens and formulating hypotheses to explain what they observed.[72] They made it a principle that when two hypotheses explain the same phenomena equally well, the simpler hypothesis is to be preferred.[73] Clearly they recognized the three cardinal principles of ancient empiricism: direct observation, records of past observations, and inference from similar to similar. These same principles also appear in the section on meteorology in the works of the astronomer Geminus.[74]

These passages are sufficient to show that in the Hellenistic period essentially the same formulation of empirical method appears in a number of different arts and sciences. It is clear,

[67] *De Div.* I.12–13, 15, 24–25.

[68] *Historiae* I.84.6; VI.3.1–2.

[69] *Ibid.* IX.2.4–5.

[70] Ptol. *Synt. Math.* VII.1 (ed. Heiberg), Vol. I², pp. 2–3.

[71] *Adv. Math.* V.1–2.

[72] Theon of Smyrna, *Expositio Rerum Mathematicarum* XXXIV (ed. Hiller), 188; Simpl. Comm. on *Phys.* 193b.23 (ed. Diels), 291–292. Cf. P. Duhem, Σώζειν τὰ Φαινόμενα, 3–27.

[73] *Synt. Math.* III.1, Vol. I¹, p. 201; XIII.2, Vol. I², p. 532; Simpl. Comm. on *De Caelo* 292b.10 (ed. Heiberg), 487.25–27.

[74] Geminus *Elementa Astronomiae* XVII.

therefore, that there was an ever growing empirical tradition to which the individual arts and sciences were more or less closely related. The later Epicureans followed this tradition, and their whole treatment of the arts and sciences is based upon it. Philodemus again is the spokesman for this later Epicurean point of view.

Philodemus states in his *Rhetoric* that all arts and sciences are derived from observation plus a method of inferring common principles.[75] Mere observation is not sufficient; for if it lacks method it can make no inferences or predictions with any degree of probability. Philodemus says that rhetoric, for instance, is based merely on familiarity and practice without method, and hence it is not a science any more than woodcutting is a science.[76] But even among the sciences some have a much more rigorous method than others, and there is a corresponding variation in the probability of their principles. The inexact sciences are conjectural. They can establish probabilities but not certainties. They have a minimum of method, and rely heavily on familiarity and experience. Such are for instance medicine, navigation, poetics, and epideictic oratory.[77] The exact sciences, on the other hand, which are also empirical, have a completely rigorous method and attain certain results. Such sciences are painting, music, and grammar.[78] Philodemus makes no mention of astronomy or divination; being a good Epicurean, he had no use for either one. Philosophy, for Philodemus, is also an empirical science, partly conjectural and partly exact. For example, the best course of action for any one person can be determined only probably; but the basic principles of good and bad are established with exactness.[79]

[75] Philod. *Rhet.* Suppl. 35.
[76] *Ibid.* 27–30.
[77] *Ibid.* 14, 27, 34, 61.
[78] *Ibid.* 35.
[79] *Ibid.* I.248–249.

To conclude, the Epicureans knew and used the extensive empirical theory that was available to them in ancient times, and even after the death of Epicurus they kept abreast of the empirical development of arts and sciences. They took the stand that a rigorous empirical method will establish "necessary" truths, and that in their own philosophy they possessed such a method. The following chapter will trace the formulation and applications of empiricism within the Epicurean school, and the final chapter will discuss the Epicurean defense of empirical method against the attacks of the Stoics.

CHAPTER V

Development of Epicurean Logic and Methodology

The historians of philosophy, following long-standing tradition, have generally assumed that the Epicureans despised the study of logic, and that they entertained a very naïve view of the nature of philosophic method. Yet this traditional view is not consistent with the actual writings of the Epicureans, which reveal a lively and serious interest in logic and related problems. Both Epicurus and his followers devoted much of their energy to this part of their philosophy.

I. *Epicurus*

The epistemological basis of Epicurean empirical logic and methodology appears in Epicurus' letters preserved by Diogenes Laertius and in Sextus Empiricus' discussion of Epicureanism. According to Epicurus, "All perceived objects are true, and sensation is from an existent and is such as the existent which arouses the perception." [1] Truth is existence, which is never false. Nothing comes from non-being. The images of a mad man and the dreams of a sane man are true in so far as they affect or move them. The non-existent does not affect us. All perceptions are true, not in the sense that the things by which they are excited are such as they appear in perception, but because there are certain causes from which the perceptions naturally follow.

Those who assert that some perceptions are true and some are false, Epicurus says, err in not distinguishing belief and opinion, which are additions of the mind, from what is self-evident or given. In the case where Orestes thought he saw

[1] Sextus *Adv. Math.* VIII.63; cf. VII.203–204. The translations from Sextus are our own. N. W. DeWitt in a recent article, "Epicurus, Περὶ Φαντασίας," (*Trans. Am. Philol. Assoc.* LXX [1939], 414–427), has made a different interpretation of the Epicurean theory of perception.

the Erinyes, the perceptions aroused by the images were true (for there were such images), but the mind made a mistake in thinking these were real, solid objects. As all perceptions are true, error is due to opinion, which is added by the mind to the original sensation. This involves a judgment on our part as to the real nature of the perceived object. In this process the mind adds to or subtracts from the original perception, and thus alters it in some fashion. For example, if we see someone approaching from a distance, from the manner of his approach and certain clues or signs presented by the perception, we conjecture that it is Plato. Thereupon, we add the remaining signs of Plato to the perception. Or again, certain features of the original perception may be neglected. When an oar is seen to be bent in water, the circumstance of the water may be neglected and the oar judged to be really bent or broken. In this case we actually subtract from the original perception, that is, disregard a part of the clues or signs it furnishes.[2]

The view that truth is on the level of perception rather than on the level of opinion might seem to lead to epistemological solipsism or scepticism; yet Epicurus gave it a positive social significance through his analysis of language.[3] Epicurus' position is that words have the same meaning for all the members of a social group because their meaning is based on the immediate experience of objects that are known to the members of the group. Words refer primarily to objects that are apparent;[4] their cognitive meaning, which is purely extensional, can be determined by specific empirical reference to the objects of experience. It follows for Epicurus that language, like truth, is on the level of perception rather than opinion, and that any use of words to refer to non-empirical entities, such as the universals of the rationalists, should be rejected as

[2] For further discussion of Epicurean epistemology, see C. Bailey, *Greek Atomists and Epicurus*, 236–274, and Philippson, *De Philodemi Libro*, 10–31. Bailey's discussion must be used with caution.

[3] Cf. P. De Lacy, "The Epicurean Analysis of Language," *Am. Journn. Philol.* LX (1939), 85–92.

[4] Diog. Laer. x.33.

lacking cognitive meaning.[5] Epicurus condemns also the rhetorical use of language, since by emphasis on the form of expression it obscures the cognitive meaning of words, and draws the attention away from the truth of what is being said.[6] He ridicules those who believe that they have said something when they have applied to some unknown object a metaphor from another object equally unknown.[7] He holds that the only correct language for a philosopher is the language that has been gradually built up by society as a practical means of communication about the objects of experience; and if this language requires alteration because it is inexact or inadequate it should never be altered except in strict accordance with empirical facts.

One of the younger contemporaries of Epicurus, Colotes, wrote several works on Plato, in the fragments of which we find an application of Epicurus' analysis of language. Colotes attacks the use of poetry for the presentation of philosophical thought, maintaining that poetical expressions obscure thought, and that such devices as the myth in the tenth book of the *Republic* have no philosophical value. His stand here, of course, is in complete accord with Epicurus' statement that words refer to something evident.[8]

Epicurus elaborates further the empirical basis of language in his analysis of the origin and growth of speech. Originally men uttered emotional cries, expressing love, fear, and the like, which indicated naturally (as opposed to conventionally) to other men the feeling of the person uttering them, but which did not say anything specifically about external objects. From these cries, Epicurus says, there gradually arose a system of conventional sounds referring to objects.[9] The development of

[5] Epicurus *On Nature* XXVIII (ed. A. Vogliano, *Epicuri et Epicureorum Scripta*, pp. 15–17).

[6] Philod. *Rhet.* I.33 = II.257.

[7] Epic. *On Nature* XXVIII.11–12.

[8] Cf. Crönert, *Kol.*, 4–12.

[9] Diog. Laer. X.75–76.

a conventional language was a purely practical evolution, and was not guided by any metaphysical considerations. The Epicureans thus rejected the various attempts of the rationalists to find some inner connection between language and ultimate reality.[10] Yet the Epicureans maintained that on the empirical level language involves no distortion of reality. By a psychological and half-unconscious process based on accumulated experiences, objects have been divided into classes according to their similarities and differences; and by virtue of this process, which produces what Epicurus called "anticipation," or "apperception" (*πρόληψις*), the person who uses or hears a word knows the sort of object to which that word refers. This is not to say that there is any sort of mental entity to which words refer; it is rather an approach to the later nominalistic view that words refer directly to objects and that the role of the person who relates words to objects is a purely functional one. The validity of this function is assured by the fact that the "anticipation" is based on accumulated experience and thus represents a very broad induction.[11]

Epicurus believed that an empirical system need not be limited to objects immediately perceived, but may include also objects beyond present experience. Some objects are as they appear manifestly. Others we are prevented from knowing as they are in themselves because of their minuteness or magnitude, or distance from the perceiver.[12] These, then, are unperceived (*ἄδηλα*) as far as our experience is concerned. Knowledge of them involves an inference beyond immediate sense data. Additional criteria are necessary for this extension of knowledge in order to determine which conclusions about the unperceived are true and which are false. Perceptions, being our immediate sensations, are always true; but inferences concerning that which is not directly or completely experienced may be true or false.

[10] E.g. Plato's *Cratylus;* cf. Origen *Contra Celsum* I.24.
[11] Cf. Bailey, *Gk. Atom.*, 245–247, 557–558.
[12] Sextus *Adv. Math.* VII.207–216.

Knowledge of unperceived objects, being mediate, is acquired by means of signs. Using objects of immediate experience as signs, we make inferences concerning the nature of the things which are at least in part unknown to and not experienced by us. In order to analyze and formulate the different kinds of inference by signs, the Epicureans divide all things into the following classes:

1. Things immediately perceived. These are known without inference of any kind.
2. Things not immediately perceived. This second class is broken up into:

a. Things which can never be perceived or known through inference, regarding which we are doomed to eternal ignorance, because of our own limitations; e.g., whether the number of the stars is odd or even.

b. Things which can never be directly perceived, but which can be known through analogical inference from perception, e.g., atoms and void.

c. Things which are not perceived at the moment, but which may be perceived at some other time or place. These things may also be known through signs; e.g., a scar is the sign of a wound, smoke is the sign of fire.[13]

In each of these classes judgments are tested in a different way. Perceptible things are immediately present to us and

[13] This classification is given twice by Sextus: in *Adv. Math.* VIII.316–320 and in *Pyrrh. Hyp.* B.97–99 (*Adv. Math.* VIII.145–147 is almost the same as *Pyrrh. Hyp.* B.97–99). Yet these two passages vary in terminology, and in neither case does Sextus say to what school he is indebted for the division. Of the two passages, *Adv. Math.* VIII.316–320 seems to be Epicurean, since it cites as examples atoms and void, and it leads into a discussion of direct and indirect verification. The terminology of the passage, however, does not fully agree with the Epicurean terminology found in Diog. Laer. X.34 and *Meth. of Inf.*, Frag. IV. The passage in *Pyrrh. Hyp.* bears even less resemblance to Epicureanism. Philippson (*De Philodemi Libro*, 58–66, 69–70) thinks that neither of the passages in Sextus is Epicurean. He assigns the passage in *Pyrrh. Hyp.* to the physicians, the one in *Adv. Math.* to the Stoics. Cf. below, 161–162. In any case it is generally agreed that the Epicureans accepted such a classification.

offer no difficulty. Judgments concerning them are verified directly and easily by reference to the objects. "When the object about which a judgment is made is evident and immediately apparent, it is easy to refer back to the object judged, and to say that the judgment is true when it is verified by the thing, or false when it is not thus verified." [14] In the language of modern empiricism, the judgment is "confronted by the thing." A false judgment cannot be so verified.

When the object is unperceived, however, the verification cannot be so direct or so certain. Yet here, too, the criterion is always ultimately the sensible fact. In the case of objects which are temporally unperceived, because they lie in the future, or not completely perceived owing to certain circumstances in the present, the process is known as verification or confirmation (ἐπιμαρτύρησις—literally, "witnessing" or "testimony"). "Verification consists in the direct perception that the object of judgment is such as it was judged to be." [15] If the judgment can be verified by actual experience, that is, by the appearance of the object or fact as it was designated in the judgment, its truth is established. The test is still the appearance of the object as predicted in the judgment. For example, when Plato is approaching at a distance, before I can determine certainly the identity of the person whom I see approaching, I conjecture that it is Plato. When the person has approached sufficiently, I see that it is Plato. When the factor of distance, which previously made recognition impossible, has been removed, then my conjecture is verified by the appearance of the object itself.

By admitting such a criterion Epicurus has not departed from his strictly empirical point of view. Sense data are still the origin, criteria, and basis of all knowledge.[16] Nevertheless, he has extended his knowledge beyond his immediate experience and beyond present experience in general. Opinions

[14] Sextus *Adv. Math.* VIII.324.

[15] *Ibid.* VII.212. The process is somewhat analogous to certain pragmatic theories in which truth is defined as "verified prediction."

[16] *Ibid.* VII.216; cf. *Meth. of Inf.* XV.25–28; Plutarch *Adv. Col.* 4–5 (1109)

according to this method may be judged true when they are verified by the facts themselves in the present immediately, or by the appearance in the future of what was expected and predicted in the present judgment. We may make hypotheses if they can be verified or supported by facts. But can we go still further? In other words, can our method be generalized so as to apply to objects that cannot ever be perceived?

This point is important because it involves the validity of the doctrine of atoms and void, Epicurean metaphysics. The method here is a less direct form of verification than that of the preceding case—the proof that there is no evidence to the contrary (οὐκ ἀντιμαρτύρησις). "Therefore verification and lack of evidence to the contrary are the criteria of the true, and lack of verification and evidence to the contrary are the criteria of the false." [17] Opinions or hypotheses about objects that are unperceived by nature are true in so far as they do not conflict with known appearances or present opinions.[18] The Epicureans posit the existence of a void although it is not directly experienceable. Its existence, however, does not conflict with any known facts and is indeed supported by the empirical fact of motion, which requires a void for its possibility. Such indirect verification must be distinguished from the Stoic method of contraposition, according to which the existence of motion necessitates *a priori* the existence of a void, because if the existence of a void were denied, motion would be also.[19] The Stoics base their argument on an *a priori* principle according to which the opposite would be contradictory, while the Epicureans merely formulate hypotheses to explain empirical facts, on the principle that there is an analogy between the apparent and the non-apparent.

In the last analysis, the foundation of all proof for Epicurus is perception. By means of the two methods mentioned above

[17] Sextus *Adv. Math.* VII.216.

[18] This assertion on the part of Epicurus is similar to Newton's statement of the method science is to follow in the *Principia*, III, "Regulae Philosophandi."

[19] *Meth. of Inf.* VIII.26–IX.3; see above, 43, note 24.

for transcending present experience, however, Epicurus has shown the possibility of a purely empirical method which is not limited to any immediate sense experience. This is a somewhat simplified, yet unmistakable, attempt to formulate an empirical theory of meaning. According to this view, meaning, as the verifiable, always outruns and precedes the limitation of the verified, which is truth.

It has already been stated that Epicurus applied his empirical method in all branches of his philosophy. Some of these applications have been mentioned; e.g., in physics the atomic theory is an hypothesis based on inference from empirical observation, and indirectly verified by lack of evidence to the contrary. The presentation of alternative theories for the explanation of meteorological and astronomical phenomena is likewise in conformity with the methodological principle that when complete verification is impossible any hypothesis may be accepted which does not conflict with the available evidence. It is indeed a significant indication of Epicurus' integration of his methodology with his physics that almost all of the rather extensive fragments of Book XXVIII of his work *On Nature* deal with methodological and linguistic problems.[20]

Epicurus applied his empirical method also in other fields, especially religion and ethics; but unfortunately among the extant fragments of his works there is not sufficient evidence to show how the application was made. It is not until we come to the works of later Epicureans that we find detailed information on the broader extension of empirical method. The analysis and formulation of empirical logic and methodology remained one of the central topics in Epicurean philosophy long after the time of Epicurus.

II. *Polystratus*

The treatment of methodology and logic by other early Epicureans, including Metrodorus, is too fragmentary to

[20] Cf. R. Philippson, "Neues über Epikur und seine Schule," *Nachr. der Gesell. der Wiss. zu Göttingen*, Phil.-Hist. Klasse (1929), 127–149, esp. 148.

make any addition to our knowledge. The next significant application of Epicurean logic occurs in the work of Polystratus, an Epicurean scholarch of the latter part of the third century B.C. In his work *On Irrational Contempt* (Περὶ Ἀλόγου Καταφρονήσεως)[21] he defends certain Epicurean doctrines, among them the attack on the fear of the supernatural. In the course of the discussion he treats the relation of men to animals. The rationalists in Greek philosophy had made a very sharp differentiation between animals and men, but the Epicureans emphasized rather the similarities. Accordingly, Polystratus holds that one of the arguments against the supernatural is that animals other than man do not have omens and visions and do not fear the gods.[22] Philodemus later used a similar argument in his work *On the Gods*.[23] We may compare an analogous inference from the similarity of men and animals in Epicurean ethics; namely, the argument that animals as well as men naturally seek pleasure as the highest good.[24] Lucretius also uses analogies between men and animals.[25] A formal treatment of the validity of inferences between species of the same genus, as in the case of men and the lower animals, appears in the works of Philodemus.[26]

Polystratus makes it clear that he considers the argument based on the similarities of men and animals as an application of empirical methodology. He reaffirms in his work the basic principles of Epicurean empiricism: Truth must be borne out by experience, and with no evidence to the contrary (ἀντιμαρτύρησις);[27] dialectical word-choppings should be rejected in favor of the actual study of nature;[28] and we should never

[21] Ed. C. Wilke (Leipzig, Teubner, 1905).

[22] Frags. 5–7.

[23] Bk. I (ed. Diels), Cols. X–XV.

[24] Cf. Sextus *Adv. Math.* XI.96. According to Aristotle, *Eth. Nic.* 1172b.9 ff, Eudoxus used a similar argument.

[25] E.g. III.296–307; IV.1192–1207.

[26] *Meth. of Inf.* XVIII.17–XIX.4.

[27] *Op. cit.*, Col. III.

[28] Cols. IV–V.

contradict appearances.[29] Finally, he gives an empirical approach to the problem of relations. He attacks the stand that relativity has any metaphysical implications. Those who argue that beauty and ugliness are not real by nature because they vary with individuals and situations would also have to admit that largeness, heaviness, and swiftness are unreal; but in doing so they would be going against the facts of experience. Polystratus' own view is that we must recognize as equally real both objects which remain the same in all situations, such as bronze and stone, and relations which always vary with situations. Relations do not exist in the way that objects do, but they are none the less real; and it would be foolish to deny the existence of either objects or relations, or to try to reduce one to the other.[30] Polystratus' chief concern in this analysis of relations lies, of course, in the realm of value. He is defending the empirical view that values are not absolute in a Platonic sense, yet they are nevertheless real elements in human experience.

III. *The Epicurean Mathematicians*

After Polystratus there is again a break in our knowledge of Epicurean logical studies. One somewhat surprising movement that probably belongs to the late third or early second century is the introduction of mathematics into the Epicurean school. Basilides and his pupil Philonides became famous as Epicurean mathematicians, the latter being a friend of Apollonius of Perga.[31] Whether these men tried to construct an empirical basis for mathematics is unknown, as their works are completely lost. We do know, however, that purely formal mathematics was attacked by Zeno of Sidon and Demetrius the Laconian, the teachers of Philodemus. They refused to recognize the validity of a system based on postulates; and apparently they maintained that mathematics is valid only

[29] Col. XVI.

[30] Cols. XII–XXIX.

[31] See Crönert, *Kol.*, 87–89, 97.

in so far as it is empirically grounded.[32] Likewise Philodemus in Col. XV of the *On Methods of Inference* states that "The fact that the square of four is the only square having its perimeter equal to its area does not hinder us from inferring by analogy; for all the square numbers tested by trial have shown that this distinction exists among them, so that one who denies it contradicts appearances." In the *Rhetoric* also he says that the geometer, in common with other scientists, infers the unknown from the objects of perception.[33] These passages clearly put mathematical truths on an empirical basis, and it is possible that Philodemus is here following a tradition established by the earlier Epicurean mathematicians Basilides and Philonides.

IV. *Zeno of Sidon, Demetrius, and Philodemus*

From the end of the second century to the middle of the first century B.C. the Epicureans were much concerned with the problems of logic and methodology. They were stimulated by the controversies over methodology that were raised by the Middle Stoa, the New Academy, and the arts and sciences, especially medicine. Under the influence of the empirical sciences, and in opposition to Stoicism, they analyzed and formulated in more detail their own empirical method. Cicero refers to their activity in two passages, where he mentions the increased interest in methods of proof among the more recent Epicureans.[34] It has been suggested that the Epicurean logicians, led by Zeno and Demetrius, were a small heretical group who did not have any lasting influence.[35] There were, indeed, a number of factions within the Epicurean school in the time of Philodemus,[36] but the issues involved are not very clear,[37]

[32] *Ibid.* 109–111.

[33] *Rhet.* II.38.

[34] *De Fin.* I.31; *De Nat. Deor.* I.46.

[35] Cf. Philippson, *De Philodemi Libro*, 28–34; Bailey, *Gk. Atom.*, 259, note 1.

[36] Cf. *Meth. of Inf.* XXXI.8–16; *Rhet.* Suppl. 8, 24, 32–33, 44.

[37] For instance, Philodemus apparently agrees with Bromius on the principles of inference, but disagrees with him on rhetoric.

and it is often impossible to say which faction was closer to the teaching of Epicurus himself. In any case, the development of empirical methodology did not require any fundamental change of Epicurus' principles, but only a further elaboration.

The controversy between Epicureans and Stoics on the validity of empirical inference will be treated in detail in the following chapter. It need only be mentioned here that Demetrius, Zeno, Bromius, and Philodemus all took part in the controversy. Besides the work *On Methods of Inference* Philodemus wrote several other works on logic, of which only brief fragments remain.[38] Outside of logic proper we find many indications that during this period the empirical approach was used also in the fields of aesthetics, rhetoric, the special arts and sciences, ethics, and religion.

A. *Music, Poetry, and Rhetoric*

Epicurean aesthetics dates largely from the later period of Epicureanism. We have seen that the early Epicureans took a certain stand toward poetry and rhetoric, condemning them as unsuitable for the expression of philosophical thought; but in the works of Philodemus for the first time we find an appreciation of the intrinsic value of poetry, rhetoric, and also music. Philodemus follows the writings of his predecessors Demetrius and Zeno in this field.

Philodemus' analysis of poetry and music is definitely empirical. It is closely united with his view of the nature of language and communication. He differentiates the relation of words to objects from the relation of words to the subjects who speak or hear them. The relation of words to objects is a purely conventional one, certain words being chosen for the sake of convenience to refer to certain objects. But the relation of words to subjects is a natural one. The actual sound of the word itself may express something to the hearer, even

[38] See Scott, *Fragmenta Herculanensia*, 27, 28–30, 32; Crönert, "Die Λογικὰ Ζητήματα des Chrysippos," *Hermes* XXXVI (1901), 548–579.

if it does not belong to a language system at all. Animal cries are of this type.[39] Now in the field of art, Philodemus points out that music is composed of sounds that do not refer to external objects, but derive their meaning and value entirely from their relations to the subjects that produce and hear them. He says further that the values presented by music are sharply distinct from all moral and practical values. Moral values are established by the empirical investigation of the relation of certain modes of conduct to the pursuit of the best life; and since music is not rational (ἄλογος), it could have no part in such an investigation.[40] Any association in the hearer's mind between songs and moral values is entirely a matter of opinion, and has no ground in the music itself.[41] Likewise, music does not have the power to arouse men to action. For action is aroused by deliberation or impulse, both of which are outside the realm of music.[42] To be sure, laborers often sing at their work; but the song does not incite them to work, it merely produces some alleviation of their toil by bringing to them a certain amount of pleasure.[43] It is clear that here Philodemus is denying the moral and practical values attributed to music by Plato, Aristotle, and the Stoics.

The art of poetry, according to Philodemus, differs from music in that its effect depends on both the sound of the words it uses and their reference to objects. In the best poetry these two elements are combined to give a single effect. It follows further that since the excellence of poetry lies in the success with which it accomplishes the synthesis of the expressive sound of the words with their reference to objects, it is wrong to judge poetry by any external standards, such as truth or morality. Philodemus also objects to saying that pleasure is the sole end of poetry, or that poetry must have

[39] See above, 140; cf. P. De Lacy, "The Epicurean Analysis of Language," *Am. Journ. Philol.* LX (1939), 87–88.

[40] Philod. *On Music* (ed. van Krevelen), 194.

[41] *Ibid.* 138–140.

[42] *Ibid.* 152.

[43] *Ibid.* 154.

the double purpose of giving pleasure and instruction. All of these things he regards as irrelevant to the excellence of poetry as such.[44]

The emotional and imaginative quality of poetry, Philodemus argues, makes impossible the use of poetry in philosophy. For philosophy strives after an empirical and scientific study of the world, and philosophical language should therefore have as little of the emotional element as possible. The poet, on the other hand, is not concerned with accuracy, but he selects from the world whatever he may best use to create his poetic effect. The philosopher makes a scientific description and classification of things according to their degrees of similarity; the poet confuses the most diverse things by emphasizing in his metaphors and similes points of resemblance that are for a philosopher very superficial. Therefore, Philodemus says, since poetry is not based on a sound empirical method it should be kept quite apart from philosophy. The philosopher should express his thought in simple prose, and the poet should not try to persuade by emotional appeal.[45]

Philodemus' discussion of rhetoric, or literary prose, also grows out of his basic empirical point of view. As in the case of poetry, he allows as legitimate any rhetorical composition which is written merely for display. The cultivation of fine writing, which he calls sophistic rhetoric, is a recognized art.[46] Yet he finds that most rhetoricians write not merely for display, but for a practical purpose, namely, to persuade their hearers that something is true or good. That is, they are using expressive sounds of words and poetic metaphors and images to create an effect in the listeners that will lead to belief or action. From an aesthetic point of view they destroy

[44] See Philod. *On Poems* II (ed. Hausrath); V (ed. Jensen); A. Rostagni, "Filodemo contro l'Estetica Classica," *Rivista di Filol.* LI (1923), 401–423; LII (1924), 1–28; "Sulle Tracce di un'Estetica dell'Intuizione presso gli Antichi," *Atene e Roma* I (1920), 46–57.

[45] Philod. *On Poems* II (ed. Hausrath), 254, 265; *On Music* (ed. van Krevelen), 202; cf. *Rhet.* I.149–154, 369.

[46] Philod. *Rhet.* Suppl. 34, 61.

the artistic unity of their work by introducing an external end. They try to unite a purely cognitive or moral problem with emotional expression.[47] From the practical point of view Philodemus argues that they enchant their hearers by an emotional appeal and thus obscure the thought of what they are saying. They may intentionally increase the obscurity to cover the actual weakness of their argument.[48] Rhetoric is therefore not a legitimate science, because it tries to establish true propositions without using an empirical scientific method. Rhetoric, like poetry, must be avoided by the philosopher and the scientist.

B. Arts and Sciences

While discussing the unscientific nature of rhetoric,[49] Philodemus outlines the empirical method which he considers fundamental to all of the special arts and sciences. He does not accept the trial-and-error empiricism that rests on mere familiarity and practice, but insists that the peculiar nature of art or science lies in "method and the transmission of certain common principles applicable to particular cases." [50] Philodemus recognizes that some arts are more exact than others, the less exact being called conjectural. Here the word art (*τέχνη*), of course, is used in a very broad sense to refer to all organized bodies of knowledge. Among the exact arts he includes painting, music, and grammar; among the conjectural medicine and navigation. An essential quality of all arts is that they be derived entirely from experience. Even in the exact arts the basic principles are learned through familiarity with a number of particular cases; this same condition prevails in the conjectural arts, which rest entirely on empirical probabilities. Hence it is essential that every art, even mathematics, have certain basic principles established by empirical

[47] Cf. P. De Lacy, "The Epicurean Analysis of Language," *Am. Journ. Philol.* LX (1939), 89–90.

[48] *Rhet.* I.156–158, 163; I.33 = II.257.

[49] See above, 136.

[50] *Rhet.* Suppl. 30.

method.[51] There is a methodological unity of all the arts and sciences; for though they have special subject matters and special techniques, they all use empirical inference from the apparent to the unknown.[52]

C. Ethics

Among the special fields amenable to empirical treatment Philodemus includes the study of ethics. He says in the *Rhetoric* that the Epicureans accept the common meanings of good and bad and support them by inductive reasoning.[53] This statement is quite in harmony with the doctrine already mentioned that philosophy begins with the language of everyday life and works on from there. By an inductive inference which they themselves regarded as necessarily valid,[54] the Epicureans established that pleasure is the greatest good. They based their inference on what they believed to be an empirical fact, namely, that all men and animals naturally seek pleasure.[55] Here they also used their theory of "anticipation," arguing that the term good is naturally associated with pleasure. Once the greatest good was established, all other ethical study was reduced to the problem of what contributes to pleasure and what does not.[56] The term good is always relative to the highest good,[57] and the problem of finding out what is instrumentally good may be solved by inductive inference. Philodemus states that by careful and extensive observation, joined with a memory of similarities and differences and an empirical knowledge of consequences, one can avoid those things which do not lead to happiness.[58] Philodemus' own writings reveal the extent to which he used an empirical method in treating ethical problems. In his work

[51] *Ibid.* Suppl. 35; II.38.
[52] *Ibid.* II.37–39.
[53] *Ibid.* I.254.
[54] *Ibid.* I.248.
[55] Sextus *Adv. Math.* XI.96; Cic. *De Fin.* I.30; II.32.
[56] See Cic. *De Fin.* I.42; *Tusc. Disp.* V.95–96.
[57] *Rhet.* I.218.
[58] *Ibid.* II.30–31.

On Anger, for instance, he declares his intention of establishing by inductive inference the essential nature of this emotion.[59] He starts from the evidence that is given (*φανερόν*),[60] and on that basis he constructs his inferences. Often when the text of the work is too fragmentary to be fully understood, the empirical orientation may be recognized by the occurrence of the words *ἐπιλογισμός* (inductive inference), *ἀδιανοησία* (inconceivability), and other technical terms of Epicurean logic.[61]

Further evidence of empirical method in ethics may be seen in the work *On Household Management*, where Philodemus discusses the ethical value of the accumulation of wealth. Here Philodemus reduces the problem to one of ambiguity of terms. He then rejects dialectical definitions, and by fixing the meaning of good by an appeal to the "anticipation" that good is pleasure, he argues that the best manager is not one who is most skillful at amassing wealth, but rather the one who acquires only such wealth as is conducive to the best life. Philodemus points out that it is a fact of experience that wealth and happiness are not necessarily correlative.[62]

Among the empirical elements in Philodemus' ethical writings should also be mentioned the criticism of Platonic dialectic in the work *On Vices*.[63] This criticism is quite in the spirit of the remarks of Colotes already mentioned. In another place Philodemus suggests the possibility of determining empirically that which is most detrimental to friendship.[64] In view of the uniformly empirical orientation observable in even the short fragments of Philodemus' ethical works, it is perhaps not impossible that when the Herculanean papyri are more fully understood we shall find that Philodemus undertook to formulate a comprehensive ethical system on empirical grounds.

[59] *On Anger* (ed. Wilke), 25.

[60] *Ibid.* 16, 18, 24.

[61] E.g. *ibid.* 23, 89, 91, 92; cf. also Philippson, "Philodems Buch Über den Zorn," *Rhein. Mus.* LXXI (1916), 431–432, 441, 451, 458.

[62] *On Household Management* (ed. Jensen), 43–59.

[63] *On Vices* (ed. Jensen), 39.

[64] Usener, *Epic.*, Frag. 552.

D. Religion

Finally, Philodemus' works on religion provide an excellent example of his use of empirical method. He tells us that the gods are known in two ways, by immediate experience through mental perception, and by analogical inference.[65] From mental perception of the gods we know that they exist; but their nature, which is unperceived, must be "inferred from appearances."[66] In conformity with this principle Philodemus determines the shape, wisdom, and activity of the gods by analogy with men.[67] The formulation of an empirical basis for knowing the nature of the gods is undoubtedly much older than Philodemus. The same procedure was probably followed by Epicurus himself. Not only in Philodemus, but also in Book I of Cicero's *De Natura Deorum* empirical inferences occur and even the technical terms of Epicurean logic. Whether similitudine et transitione in I.105 is a free translation of *μετάβασις καθ' ὁμοιότητα* is a disputed question;[68] yet apart from that we may see clearly the appeal to inconceivability and the use of analogical inference from signs.[69]

This brief survey of the works of Philodemus has shown the extent to which the later Epicureans employed their empirical method in all the branches of philosophy. Certain technical terms and forms of argument stand out as the characteristic marks of this empirical approach. One of the most basic is the insistence on the empirical extension of terms, with the consequent exclusion of art and dialectic from the realm of philos-

[65] *On the Gods* I (ed. Diels), Col. II; cf. Philippson, "Zu Philodems Schrift Über die Frömmigkeit," *Hermes* LVI (1921), 374; *De Philod. Libro*, 71–78.

[66] *On the Gods* III (ed. Diels), Col. VIII; cf. Col. XIII, frags. 13, 48.

[67] Cf. E. Bignone, "Philodemea," *Riv. di Filol.* XLVII (1919), 414–422; also Philippson, "Zur Epikureischen Götterlehre," *Hermes* LI (1916), 568–608; "Die Götterlehre der Epikureer," *Rhein. Mus.* LXXXIII (1934), 171–175. A few important ancient texts, besides those already mentioned, are Philod. *Meth. of Inf.* XXII, XXVII; *On the Gods* I, Col. VII; Usener, *Epic.*, Fr. 356.

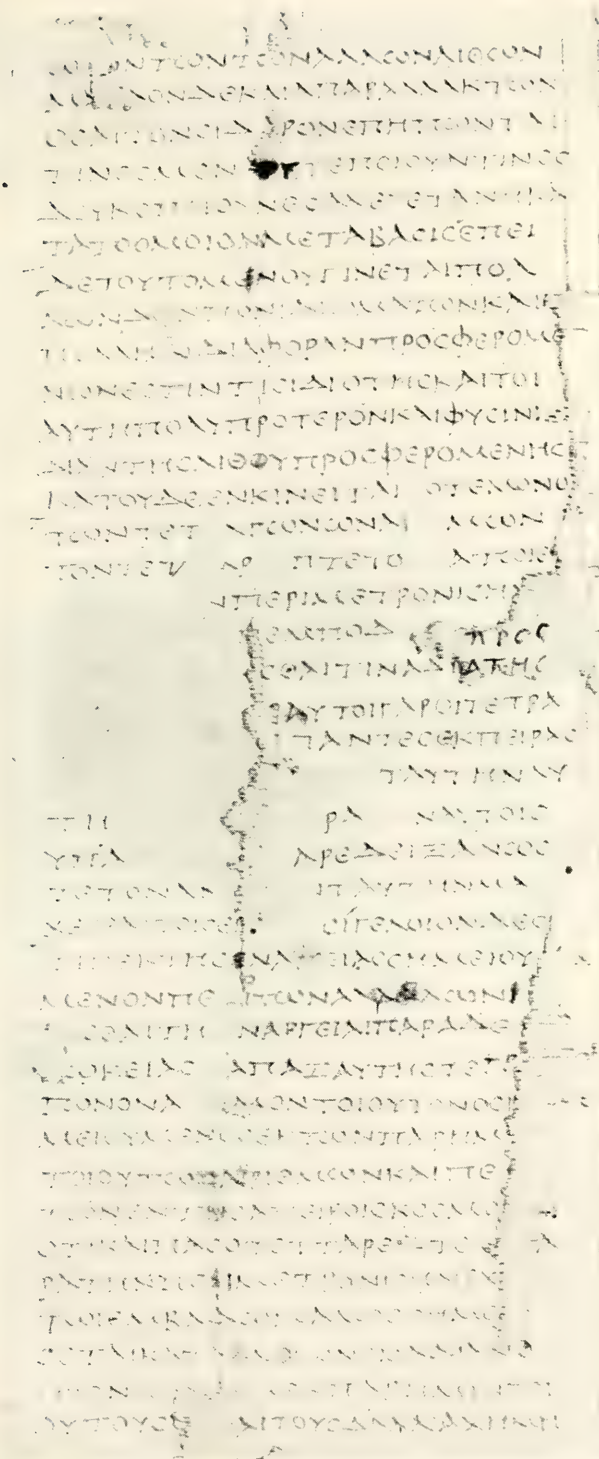
[68] Cf. Bailey, *Gk. Atom.*, 590–594.

[69] E.g. *De Nat. Deor.* I.24, 25, 30, 36, 43, 46.

ophy. Another is the appeal to "anticipation," the common meaning that has come to be empirically associated with a term in the ordinary language of the people. Closely related with this is the use of inconceivability as a basis for rejecting any doctrine that does not accord with experience. In the construction of empirical inferences the need of wide observation of similarities and differences is constantly emphasized, and inferences about unperceived objects are verified, when possible, by reference to immediate experience.

The empirical method which we find fully elaborated in the works of Philodemus appears in a rudimentary form in the works of Epicurus himself. Epicurus speaks of inconceivability and inductive inference,[70] although there is no detailed account of method in the preserved fragments of his work. It is probable that the later Epicureans added much to the development of this method, and on the more technical side they were led to analyze and clarify their point of view further by a prolonged controversy with the Stoics on the correct method of inference. The main issues in this controversy will be discussed in the following chapter.

[70] Cf. Diog. Laer. x.32, 47, 59, 60, 68, 71–73, 97, 133.



Column XV of the Oxford Copy of Herculanean Papyrus no. 1065.
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CHAPTER VI

The Logical Controversies of the Stoics, Epicureans, and Sceptics

The treatise of Philodemus *On Methods of Inference* presents in a clear fashion the basic issues involved in the conflict between the rationalists of the Stoa and the empiricists of the Garden. This material, added to fragments of Chrysippus and the material given by Sextus Empiricus in his account of the Sceptic polemic against both the dogmatic schools, enables us to reconstruct in some detail the basic principles of Stoic logic. As we have already noted, both Epicureans and Stoics built their logic on inference from signs; and their divergent treatment of signs reveals the fundamental difference between the two systems of philosophy.

I. *Stoic Logic*

Chrysippus defines logic as the science about signs and things signified.[1] Logic in this broad sense includes grammar as well as logic, since words are signs. Logic in the narrow sense is limited to the analysis of the things signified, or concepts (λεκτά), which form the basis of propositions and syllogisms.

The Stoics isolate three factors of the symbolic relation in their analysis of truth:

> "They (the Stoics) say that there are three factors joined to each other, the thing signified, the sign, and the object. Of these, the sign is the word, for example the word 'Dion'; the thing signified is the thing indicated by the word, which we grasp in our concept of a co-existent entity, but which the barbarians do not understand although they hear the word; and the object, that which exists externally, as Dion himself. Two of

[1] Diog. Laer. VII.62; see E. De Lacy, "Meaning and Methodology in Hellenistic Philosophy," *Philos. Rev.* XLVII (1938), 390–409.

these are material, the word and the object; and one immaterial, the thing signified, or concept, which is true or false." [2]

The Epicureans, on the other hand, deny the existence of the intermediary concept, and insist that words have only the objective or extensional reference.[3]

Again, the Stoics emphasize the hypothetical proposition rather than the categorical syllogism of Aristotle. This distinction is of importance in the analysis of signs and sign-relations in the Stoic system. Aristotle used the term "sign" for a certain type of defective argument.[4] The Stoics, however, define the sign formally as "the proposition in a sound condition which is antecedent and reveals the conclusion." [5] Here the relation between sign and thing signified is expressed in the form of the hypothetical proposition, "If p, then q." If such a relation holds, p may be said to be the sign of q.

The reason for this new emphasis on the part of the Stoics lies partly in an analysis of the nature of reason and the reasoning process, and partly in their metaphysical scheme. Man differs from animals in his power of conception, and in the combining and synthesizing power of his reason.[6] The sign-relation, "If this, then this," expresses the essence and character of reason. In the Stoic metaphysical scheme, reason rules the world conceived of as a completely deterministic system. All things are connected rationally in a necessary causal chain. Natural events must be necessary as expressions of the universal reason. The contingency of matters of fact is only apparent, in that the finite mind has only a partial view of the interrelatedness of things.

The predominance of the hypothetical proposition in the Stoic scheme indicates their emphasis on the necessary connec-

[2] Sextus *Adv. Math.* VIII.11–12. The translations from Sextus and Philodemus are our own.

[3] *Ibid.* 13. See above, 139–140.

[4] See above, 127.

[5] *Loc. cit.* 245.

[6] *Ibid.* 275–276.

tion between concepts and propositions on the logical level, and between the parts of an interrelated whole on the metaphysical level. The shift in stress from the terms themselves in the categorical propositions and syllogisms of the Aristotelian logic to the relation existing between the terms and propositions expressed by the hypothetical proposition results in the recognition of the relation of necessary consequence, which allows for the inference of one proposition from another.[7]

The definition of a sign as the "proposition in a sound condition which is antecedent and reveals the conclusion" involves first of all an analysis of the conditions for a sound hypothetical proposition. Such a proposition has several criteria. According to the first criterion, the only unsound proposition is one in which the first term is true and the second is false.[8] The Stoic table of sound propositions is as follows:[9]

1. "If it is day, it is light."—sound. The premiss is true and the conclusion is true.
2. "If the earth flies, it has wings."—sound. The premiss is false and the conclusion is false.
3. "If the earth exists, it flies."—unsound. The premiss is true and the conclusion false.
4. "If the earth flies, it exists."—sound. The premiss is is false and the conclusion true.

The second criterion for a sound condition involves not the literal truth or falsity of the propositions concerned, but the nature of the relation or connection holding between them. The argument is sound when the conclusion follows as a consequence of the "weaving together" (συμπλοκή) or connection

[7] Sextus *Pyrrh. Hyp.* B.113.

[8] This is also the only case in symbolic logic in which the relation of material implication between propositions does not hold. It is interesting to note that the Stoics found it necessary to distinguish a loose and a strict type of implication, analogous to material and strict implication of modern symbolic logic.

[9] Sextus *Pyrrh. Hyp.* B.105.

of the premisses, as in the argument:

> "If it is day, it is light,
> "It is day,
> "Therefore, it is light." [10]

The relation between the antecedent as the sign and the conclusion as the signified is one of necessary consequence, which is based on an analytic relation between the two parts of the proposition.[11] The conclusion (the signified) is implicitly or potentially contained in the antecedent (the sign). This accounts for the necessary connection between them. According to the relation of necessary consequence,[12] or contraposition,[13] as it is called in the terminology of the later Stoics, the sign and thing signified are so connected that the contradiction of the conclusion, or the signified, involves the contradiction of the antecedent or sign, as:

> "If it is day, it is light,
> "It is not light,
> "Therefore, it is not day."

This brief account of Stoic logic indicates that for the Stoics necessary truth must be *a priori* and analytic. The conclusion is regarded as necessary when it is seen to be included at least implicitly in the antecedent. Therefore, the Stoics should exclude all synthetic truths from *a priori* knowledge and consequently all necessity from truths about objects.

In a proposition of the type,

> "If it is day, it is light,"

day may be considered the sign of light; yet as both day and light are appearances equally evident, the inference is not very significant. The real issue between the Stoics and Epicureans is the validity of inference from appearances to the

[10] *Ibid.* 113.

[11] *Ibid.* 112.

[12] *συνάρτησις*: *Ibid.* 111. A. Schmekel, *Die Positive Philosophie* Vol. I, 521–532, discusses this aspect of Stoic logic.

[13] *ἀνασκευή*: Philod. *Meth. of Inf.* IV.11.

unperceived. This involves the validity of a proposition of the type:

> "If perspiration flows on the surface of the skin,
> "There are imperceptible pores in the skin."

The inference here is made from an apparent fact, the appearance of perspiration, to an unperceived fact, the existence of imperceptible pores in the skin. Is the Stoic now in the realm of synthetic propositions about matters of fact and therefore involved in contingency rather than in necessity and certainty? This he flatly denies. The fact that perspiration flows reveals (is the sign of) the existence of pores on the assumption that a liquid does not flow through a solid body. The relation is then claimed to be as necessary as an *a priori* one, involving an analytic relation between the two objects. The Stoic applies his test of contraposition:

> "If there were no pores,
> "Perspiration could not flow."

Therefore, the appearance of perspiration is necessarily the sign of the existence of such pores. It need only be pointed out that without the premiss that there is a necessary connection between the two objects, the Stoic argument is not valid.

In the Stoic scheme the *a priori* and analytic relation between concepts is used as the pattern for causal relations on the physical level. The concept of day involves the concept of light, so that the proposition

> "If it is day, it is light"

is necessary. Accordingly, on the level of objects, the Stoics say that day is the cause of light and hence the sign of it. Thus the relation between objects is determined *a priori.*

Objects are divided into the two classes of the apparent and the unperceived.[14] The apparent, being apprehended imme-

[14] Sextus *Pyrrh. Hyp.* B.97–99; cf. the Epicurean division, above, 142–144.

diately and by themselves, need no signs. Signs, however, are necessary in making inferences about unperceived objects. These latter are divided into three classes:

1. Objects that are altogether or completely unperceived, as whether the number of stars is odd or even. This class of objects is forever incomprehensible and unknowable because of our human finitude and the great scope of the objects.

2. Objects unperceived at the time, that is, accidentally unperceived because of attendant circumstances. For example, the city of Athens is now not perceived by me.

3. Objects which are unperceived by nature and must be known by means of other things which are evident. These form the class of objects signified by the "indicative" sign, which by its very nature points out or reveals them.[15] The relation between sign and signified is a natural and necessary one. For example, the imperceptible pores of the skin are known through the flowing of perspiration, which serves as the indicative sign. Perspiration could not flow except on the condition that there were these imperceptible pores on the surface of the skin. In similar fashion, the movements of the body are by their very nature indicative of the soul within. In the latter case the relation is distinctly a causal one; the movement of the body is the effect of the soul. The indicative sign can claim necessity only on the Stoic assumption that there is a necessary connection between certain objects, such that one can serve as the distinguishing sign of the other.

The characterization of the indicative sign involves the further distinction between the general or common sign, and the particular or individual sign, a distinction attributed to the Stoics by Philodemus.[16] A general or common sign is indicative of more than one object; hence it cannot serve as the basis of a valid inference. For example, fever could not be used as the sign of any certain disease, for it is a symptom of

[15] *Ibid.* 101.

[16] *Meth. of Inf.* I.1–19.

a number of different diseases. By applying the test of contraposition we find that the common sign is not valid, for even if one disease characterized by fever were excluded, the fever might still remain. The true indicative sign must be the particular sign of its object in such a way that it refers to only one object.

II. *Controversy between Stoics and Epicureans*

Philodemus' treatise *On Methods of Inference* provides a comprehensive account of the logical controversy between Stoics and Epicureans. The Stoic position as presented here is that the only valid process of inference through signification is that of contraposition (ἀνασκευή). The distinction is first made, as we have indicated, between the common sign, which exists whether the unperceived object which it signifies exists or not, and the particular sign, which exists only when the unperceived object exists, and which is tested by contraposition.

Before discussing the Epicurean position in this controversy, let us consider further the more important arguments advanced by the Stoics against the Epicureans. The Epicurean method of analogy, the Stoics contend, breaks down if there are unique cases within our experience, for if appearances are not completely uniform we cannot infer from what occurs in our experience to that which is unperceived.[17] If there are unique cases in our experience there might also be unique cases outside our experience which would destroy the possibility of analogy. For example, the magnet is the only rock in our experience which draws iron. The unknown might contain many other peculiarities.

The Stoics maintain further that the argument from analogy is valid only in so far as it can be reduced to that of contraposition. The Epicurean inference of the mortality of all men from the mortality of men in our experience should be

[17] *Ibid.* I.19–II.25.

stated as follows:

> "Since men in our experience are mortal,
> "If there are men in other places who are similar to men in our experience in all respects, including mortality,
> "They are mortal." [18]

This argument shows that the Stoics insist on an analytic relation as a condition for valid inference. Accordingly, they regard the analogical argument as valid only if the characteristics on which it is based belong to the essence and definition of man. Because of the wide variations occurring within our experience, the essential characteristics of things cannot be established empirically, but must be established *a priori.*

The Epicureans, the Stoics say, contradict their own method of analogy. Bodies in our experience are all destructible and have color; yet the Epicureans say that atoms, which are also bodies, are indestructible and colorless. The method of analogy would require that the atoms be destructible and have color.[19]

The Stoics challenge the Epicureans again on their theory that the sun is just as large as it appears to be. From empirical observation they must hold that,

> "All objects in our experience that reappear slowly from behind objects that eclipse them have this character either because they move slowly, or because they are very large.
> "Since the sun reappears slowly, it must of necessity have one of these two characteristics.
> "But it does not move slowly, since it completes the path from sunrise to sunset in twelve hours, passing through a very great distance;
> "Therefore, it must be very large." [20]

Furthermore, in regard to the degree of similarity required for analogy, the Stoics say, the Epicureans face a dilemma:

[18] *Ibid.* II.37–III.4.
[19] *Ibid.* V.1–7.
[20] *Ibid.* X.4–16.

A. If the completely alike is the basis of the analogy, the sign and thing signified (the evident and the unperceived) would be identical, differing only in number; hence there would be no inference.

B. If the merely similar is the basis, the very difference present in the unperceived might be enough to destroy the analogy.[21]

The Epicureans hold that when nothing opposes or conflicts with their conclusions, their analogy is valid. But, the Stoics ask, how can we be certain that there is not something already experienced, or yet to be experienced in the future, which contradicts the present conclusions? [22] Such conclusions are at best only tentative and provisional.

In summary, the Stoics hold that the Epicureans can find in their empiricism no basis for inference from the given appearances to the large part of reality that is not immediately perceived. No argument based on the observation of the mere succession of similar occurrences or their constant conjunction can achieve necessity and certainty.

In answer to the Stoic polemic Philodemus contends that the Stoic *a priori* method of inference by contraposition is in reality based upon analogy and induction, and that it derives its certainty from that basis. Our experience furnishes us with the best and only criterion for judging the things that are unperceived; for by analogy with events and objects in our experience we can infer certain facts about the existence and character of objects lying outside our experience. For example, we conclude from the mortality of all men in our experience to the mortality of all men everywhere. We need not *presuppose*, as the Stoics contend, that all men are like the men in our experience in respect to mortality; but "from the fact that all men in our experience are similar even in respect to mortality, we infer that all men universally are liable to death, since nothing opposes the inference." [23]

[21] *Ibid*. VI.1–14; XIX.25–36.

[22] *Ibid*. VII.38–VIII.7.

[23] *Ibid*. XVI.16–23.

The Epicureans hold that since the Stoic position rests ultimately on induction from experience, if the method of analogy has no necessity or compulsion, the Stoic inference has none. In the argument,

> "If there is motion, there is void,"

motion is taken as the sign of void. The Stoic test is an *a priori* one; the denial of the thing signified (the void) results in the simultaneous denial of the sign (the motion). The Epicureans, on the other hand, hold that no such conclusion is possible from the *a priori* point of view until we find from observation of experience that motion does not occur without void. In the words of Philodemus,

> "Establishing by induction all the constant conditions for things that are moved within our experience, apart from which we see nothing moved, we judge by analogy that all objects that are moved are moved in every case under these conditions; and by this method we infer that it is not possible for motion to exist without void." [24]

Thus the abstract principle of the Stoics can be formulated only after experience justifies it through an argument based on analogy. Therefore, the Epicurean concludes, the argument of contraposition can claim no certainty if analogy has none, as the latter is the source and ultimate criterion of the former.

Philodemus says further that the Stoics should distinguish two types of inference. According to the first, if the second term is denied by hypothesis, the first term is necessarily denied also, as in the proposition,

> "If there is motion, there is void."

The Stoics contend that in this proposition by the mere negation of void, motion is also removed; and therefore it is an example of contraposition.[25]

[24] *Ibid.* VIII.32–IX.3.
[25] *Ibid.* XII.1–14.

But there is a second type of inference, according to which it is impossible to *conceive* that the sign exists or is such as it is, while the thing signified does not exist, or is not such as it is. "For example,

'Plato is a man, and Socrates is a man.'

If this is true, it is true also that,

'If Socrates is not a man, neither is Plato a man;'

not because by the denial of Socrates Plato is denied along with him, but because it is inconceivable for Socrates not to be a man and Plato to be a man." [26] Inconceivability, however, is an empirical criterion. A thing is inconceivable only in terms of our experience, and the argument of inconceivability is basically an analogical argument.[27] The Stoics, Philodemus maintains, cannot avoid an appeal to inconceivability.

By means of the criterion of inconceivability Philodemus answers the Stoic argument from particular signs. Philodemus accepts the distinction between particular and common signs, and he agrees that only particular signs are valid bases for inference. But he states that not every inference from a particular sign is an instance of the method of contraposition, for the method of analogy, using the test of inconceivability, is also able to establish particular signs.[28]

One of the chief Stoic objections to inductive inference was that such inference breaks down if there are unique cases in our experience; for there might also be unique cases beyond experience which would destroy analogy. The Epicureans recognize that completely unique and unpredictable events would certainly render inductive reasoning and analogy extremely ineffective except in a very narrow range. They claim, however, that the Stoics have not invalidated empirical reasoning, because the Stoics have not proved the existence of any absolutely unique events. The fact that the magnet is

[26] *Ibid.* xii.19–30.

[27] *Ibid.* xii.30–31; xxi.27–29. The Stoics would probably not grant this.

[28] *Ibid.* xiv.2–27.

the only stone that will draw iron does not destroy the possibility of an analogy; on the contrary, the very peculiarity of magnets provides a basis for analogy. If some magnets drew iron, and some did not, an analogical argument about magnets would be invalid. But since all magnets in our experience draw iron without exception, we can legitimately conclude that it is characteristic of all magnets, wherever they are found, to do this. Similarly, nothing hinders the generalization that the square of four always has its perimeter equal to its area, even though it differs from all other square numbers in this respect.[29]

Furthermore, Philodemus holds, the range of deviation among given appearances is always limited; hence we can expect a similar limited range of variation to occur outside our experience. Differences are subject to the same test of experience as similarities. For example, although within our experience men are found to vary a great deal, yet we cannot go so far as to conceive of men who are made of iron and who are able to go through walls as we go through air.[30] The degree of certainty of an inference is often relative to the amount of variation observable. We can establish a fixed and certain analogical inference, for instance, regarding the actions of certain poisons; but only relative analogies can be established on the goodness or badness of foods. Yet even here the range of deviation is limited. We could never go so far as to conclude that there might be men who eat straw and digest it.[31]

From the observation of constant similarities, the Epicureans hold, we are able to establish the nature of things *as such*. From the fixed limit of variation observed in regard to human mortality, we infer that

"Men *as men* are mortal."

Thus the necessary truths which the Stoics considered analytic

[29] *Ibid.* XIV.28–XVI.1.
[30] *Ibid.* XXI.30–XXII.2.
[31] *Ibid.* XXV.24–XXVI.9.

and *a priori* are really established by induction from experience.[32] The definitive or prescriptive level of analysis is secondary to the descriptive level, since the latter furnishes the material and a certain amount of the order and structure from which the former is derived and formulated. Deductive logic is subsequent to inductive logic in order of development because it depends on the latter. The discussion of the relation of deductive and formal logic to inductive logic and empirical method is, of course, very inadequate in Philodemus. The Epicureans do not appreciate the freedom which is subsequently possible on the definitive level, and the peculiar necessity attaching to the formal system within the confines of that level.

It may be noted that the Epicureans realize the importance of the social factor in empirical verification. Philodemus says:

> "We collect not only the signs appearing to us or tested by our experience, but also the appearances taken from observation by others. Do those who have never been there doubt that Crete and Sicily are islands? And therefore we say that the method of analogy is a sound method of inference, with this condition, that no other appearance or previously demonstrated fact conflicts with the inference." [33]

One of the Stoic charges was that the Epicureans were inconsistent in not attributing destructibility and color to atoms, since these qualities belong to all bodies in experience. In defense of the Epicurean position Philodemus maintains that

> "Bodies in our experience are destructible not as bodies, but in so far as they partake of a nature opposed to the corporeal and non-resistant." [34]

Likewise, color is not a quality of bodies as bodies, for some bodies sometimes do not have color. Philodemus is here giving an empirical justification of the important distinction between primary and secondary qualities made first by Democ-

[32] *Ibid.* XVI.29–XVII.8; XXIX.4–15; XXXIII.21–XXXV.29.

[33] *Ibid.* XXXII.14–27.

[34] *Ibid.* XVII.37–XVIII.3.

ritus. Some distinction obviously has to be made between qualities which are constant in experience and those which are inconstant and variable. Inferences between objects which are similar only in genus must be limited to those qualities which are found in all members of the genus. Color, for example, does not seem to be a generic similarity of bodies, yet tangibility and weight are such generic similarities. The latter, therefore, are qualities of bodies as bodies, and may be used in analogical inference.[35] Lucretius' account of the various senses and his attempt to reduce the other senses to touch indicate that the distinction between primary and secondary qualities was traditional in the Epicurean school.[36]

Philodemus is somewhat less successful in trying to justify empirically the Epicurean view that the sun is only as large as it appears. He insists that in attacking this view the Stoics use an analogical argument; hence their attack is not directed against the use of the method of analogy. Yet he insists further that analogical inference cannot apply to the sun, since the sun, like time and the soul, is unique. Being unique, it cannot be known by analogy.[37] The weakness of Philodemus' position here is obvious.

The Stoic argument that inference cannot be based on either identity or similarity forces Philodemus to define more specifically the relation of signification. The inference from any chance object to any other is obviously not permissible. In a true analogy from similarity the transition is made from one class or particular to the class or particular which is most like it, when nothing opposes such a transition. Inference should be made from a particular man to another particular man, from the class of men to the class of animals most closely related to men, from the genus of animals to the most closely related genus, and so on up to the most comprehensive genus.[38] Thus

[35] *Ibid.* XVIII.3–17.

[36] *De Rerum Natura* I.298–304; II.408–443.

[37] *Op. cit.* IX.12–38; X.17–XI.8.

[38] *Ibid.* XVIII.17–XIX.4.

inference can be made between similar objects in so far as they are members of the same general class. Inference may be made between identical objects if there is a difference in accompanying circumstances, that is, conditions of time and space.[39]

The Epicureans hold that it is not necessary to examine all appearances before making an empirical inference, but

> "We must consider many homogeneous and varied appearances, so that from our experience of them and from the accounts of history concerning them we may take the inseparable constituent of each of them individually, and from these we may infer to all the others." [40]

The number of cases necessary for a valid inference varies with the situation. Sometimes, one instance may be sufficient basis for the inference; sometimes only a few observed instances. At other times even a large number of instances fails to remove all uncertainty.[41] This problem is closely related to the distinction between variable and constant properties of objects. Philodemus' position is that induction is as certain as the given data of experience, and as such gains a degree of probability in proportion as it is confirmed by experience:

> "One ought not to stop with the apparent, but from the apparent make inferences about the unperceived; nor mistrust the facts proved through apparent objects according to analogy, but trust them just as one trusts the facts from which the inference is made." [42]

III. *The Sceptic Position*

The works of Sextus Empiricus reveal that the Empirical Sceptics also participated in the controversy on the validity of inference from signs. The second book of Sextus' attack

[39] *Ibid.* xxii.2–28.

[40] *Ibid.* xx.35–xxi.3. Cf. J. S. Mill's Method of Agreement, *System of Logic* (London, Longmans, Green, 1906), 253 f.

[41] *Op. cit.* xxvi.32–39.

[42] *Ibid.* Frag. ii.

on the logicians expresses the views of the Sceptics on this problem. This book contains a rigorous polemic against both the Stoic and the Epicurean treatment of signs; and at the same time it reveals Sextus' own position, namely, a positive empiricism based on a sceptical approach.[43]

Though Sextus attacks both Epicureans and Stoics, he considers the Stoics his arch opponents. Sextus objects not to the method of the Epicureans, but to their attempt to use that method as a basis of a dogmatic metaphysics. Sextus holds that a consistent empirical method leads, not to negative scepticism at one extreme, nor to dogmatic metaphysics at the other, but to phenomenalism. Sextus' method, like the Epicurean, is based on an empirical theory of signs. Yet he goes further than the Epicureans, in that he rejects all use of indicative signs (i.e., particular signs), and uses in their stead admonitive signs, which have their basis entirely within an empirical theory of meaning. His purpose seems to be primarily epistemological, to determine the limits and legitimate objects of our inquiry and knowledge.

The dogmatists, Sextus points out, assert that objects unperceived by nature, as well as those accidentally unperceived at the time, are known through the medium of signs. Accordingly, Sextus differentiates two kinds of signs corresponding to the two classes of objects signified.[44] The admonitive sign designates things unperceived at the time or through attendant circumstances; the indicative sign designates things unperceived by nature. The admonitive sign may be defined as "an object which has been observed along with another object (the signified) at some time in the past, and which, recurring when that other object is not perceived, leads us to the recollection of the object which accompanied it, now not evidently experi-

[43] Sextus *Adv. Math.* VIII.141–299. Schmekel (*Die Positive Philosophie* I.350–395) discusses Sextus' criticisms of the dogmatists. For a fuller discussion of Sextus' own position see E. De Lacy, "Meaning and Methodology in Hellenistic Philosophy," *Philos. Rev.* XLVII (1938), 406–409.

[44] *Adv. Math.* VIII.151–155.

enced." [45] For example, we say that smoke is the sign of fire; for we have observed by direct experience in the past their conjunction on many occasions, so that now, on seeing the one, namely, the smoke, we immediately recall the other, the fire, which is not itself visible. In the same way a scar is the sign of a wound. The relation between sign and thing signified may sometimes be a causal one, as in the case of smoke and fire; yet frequently admonitive signs are related only arbitrarily to the things they signify, as in the case of words and signals of various kinds. Sextus avoids the terms cause and effect, in order to maintain a strictly empirical explanation, and to avoid the assumption of a necessary connection between sign and thing signified.

The indicative sign designates objects unperceived by nature, that is, things-in-themselves, beyond phenomena. This type of sign-relation cannot be constructed on the basis of experience, since the object signified is not experienced and so not capable of being observed along with anything that appears.[46] The indicative sign must be necessarily indicative of what it signifies, and known *a priori* and apart from experience.[47]

Sextus accepts the admonitive sign but rejects the indicative sign. The admonitive sign is valid because it has its basis in daily experience and is necessary for the development of any art or science, as the means of generalizing beyond the moment and individual.[48] The indicative sign, on the contrary, is fashioned by the dogmatic philosophers and rational physicians to furnish evidence to them of the nature of things-in-themselves. The Empirical Sceptic does not intend to contest the

[45] *Ibid.* 152.

[46] *Ibid.* 154.

[47] See the discussion of the Stoic sign, above, 158. Sextus, like Philodemus, fails to see how definitions and forms of reasoning retain a certain form of necessity within a formal system. He does recognize a type of analytic or tautological proof, which is irrefutable, but he does not feel that it is significant.

[48] *Op. cit.* 156.

common conceptions of men based on experience, nor to render life chaotic by denying that there are any signs at all.[49] The removal of all signs would conflict with our daily experiences. We actually do know fire from smoke, a wound from a scar, and that death will result from a wound in the heart. Sextus admits, then, the validity of the admonitive sign, which life requires; but he rejects the indicative sign as contrary to experience and therefore meaningless.

Pushing his analysis further, Sextus points out that a sign belongs to the class of relatives.[50] A sign must always be the sign of something. There are four possible ways of considering the sign and the thing signified:

A. An appearance may be the sign of another appearance.
B. An unperceived object, of another unperceived object.
C. An appearance, of an unperceived object.
D. An unperceived object, of an appearance.

Clearly in order to be effective, a sign must be limited to *A.* and *C.* Either one appearance is the sign of another, as a shadow is the sign of a body, or an appearance is the sign of something unperceived, as a blush is the sign of shame.

Or again, signs must be known either by perception or by reason. The Epicureans hold that the sign is perceived, while the Stoics hold that the sign is intelligible, and grasped only by thought.[51] To the Epicurean view Sextus retorts that signs as sensible are subject to the disagreement and relativity of sense perception.[52] If indicative signs are sensible they should affect all people alike, barbarians and Greeks, artists and laymen.[53] That this is not the case is shown by the disagreement among physicians about the causes of the same symptoms. Fire, as we perceive it, has various powers in respect to different materials. It melts wax but hardens

[49] *Ibid.* 157–158.
[50] *Ibid.* 171–175.
[51] *Ibid.* 177.
[52] *Ibid.* 183.
[53] *Ibid.* 187–188.

clay and consumes wood.[54] Likewise the sign as sensible appears to indicate different objects to different persons and to the same person on different occasions. Such relativity is admittedly the case with admonitive signs. A signal indicates to enemies an attack, to friends a safe return. In the case of the admonitive sign we can agree among ourselves that a certain signal is to signify a certain thing.[55] But there can be no such arbitrary agreement in the case of indicative signs. An indicative sign must by its very nature be the sign of one thing, not of many. Sextus concludes, then, that indicative signs cannot be established by perception.

Sextus treats at greater length the Stoic view that signs are known by reason. The intelligible sign of the Stoics was defined as "the proposition in a sound condition which is antecedent and reveals the conclusion." [56] Such a sign, Sextus finds, is involved in a paradox of inference. Either the conclusion is included in the premisses and is evident, and therefore not revealed by the premisses; or it is not implied by them, is not evident, and is not necessarily true. The relation of logical consequence which exists between the conclusion and the premisses cannot be tested. The conclusion would have to be known first; yet the conclusion supposedly requires the premisses to establish it. The proposition,

> "If it is day, it is light,"

cannot be a real sign, since the antecedent does not reveal the conclusion as a new piece of knowledge deduced from it. There is a necessary connection between the two, but light is as evident as day, and so is not revealed by day.[57] If, on the other hand, the thing signified is not apparent, as in the proposition,

> "If there is motion, there is void,"

[54] *Ibid.* 192.
[55] *Ibid.* 200–202.
[56] See above, 158.
[57] *Op. cit.* 252–268.

the necessary consequence cannot be determined. A sound proposition with a true antecedent and conclusion can only be tested by knowing the conclusion, which would then not be revealed by the antecedent.

The implications of this argument are apparent. Necessity depends on an analytic relation between antecedent and conclusion. All logically necessary propositions for Sextus are then analytic. The Stoics are right in so far as they hold that all *a priori* truths are analytic. Sextus, however, asserts that such truth is not inference. Inference requires the statement of a new fact not already contained in the premisses. But in so far as the conclusion is not contained in the premisses, the inference is not necessary. The Stoic position was that certain synthetic truths can be established *a priori*, and thus have the necessity attaching to analytic truths.

A further criticism, which Sextus has to offer against the Stoic definition of the sign as a proposition, and of dialectic as semiotic, is that the Stoics limit signification to the formal level exclusively.[58] This restriction would eliminate a large part of the field of symbolism. On the human level, there is the practical use of signs by the farmer and the seaman, who are unversed in dialectic. Farmers and seamen do not rely on an absolutely certain science (demonstrative knowledge), but upon signs which indicate to them what to expect in the future on the basis of their past experience. Their art or science is based on predictions and the verification of these by the appearance of the events predicted. Here Sextus shows his sympathy with the empirical method developed in the practical arts and sciences.[59]

Furthermore, Sextus would not exclude the use of signs from the animal level. Animals use signs although they are incapable of forming propositions. They follow signs associated with certain facts or objects which they have previously experienced in conjunction with these signs. Even the Stoics

[58] *Ibid.* 269–271.
[59] See above, Chap. IV.

admit that animals have "expressive" reason, the power of speech, by which they communicate with each other by means of signs.[60]

In his short section on induction,[61] Sextus indicates that he realizes the difficulties of inductive reasoning, as well as those of deductive reasoning. Induction consists in the inference from particulars to a general rule. If only some of the particulars are investigated, the inference is uncertain, as there might be a conflicting case among the cases left unexamined. If all the particulars are to be examined, the task is an impossible one.

In spite of his criticisms of the Stoics and Epicureans, Sextus' outlook is not entirely negative. In some ways he shows a striking similarity to a positivistic view. His insistence on the validity of the admonitive sign, which has its basis in the observation of the constant conjunction of events within experience, together with the refutation of the indicative sign, which claims to give knowledge of objects and events outside experience, results in the affirmation of a phenomenalistic position over and above his initial scepticism. The essence of positivism is the combination of a negative scepticism in regard to metaphysical knowledge with the assertion of a positive empiricism in regard to knowledge of phenomena. The positivist recognizes the impossibility of gaining absolute knowledge of things, gives up the search for the origin and destiny of the universe and the inner causes of phenomena, and restricts himself to phenomena and the observation of their laws of succession. He limits science to the systematic coordination of phenomena and the knowledge of their uniformities, which are termed laws. These laws are not absolute but are subject to constant revision upon the discovery of new facts.

[60] *Op. cit.* 275–276. The Stoics distinguished expressive reason, the power of communication through speech, shared by animals and men, from the combining and synthetic reason belonging to men alone.

[61] *Pyrrh. Hyp.* B.204.

Sextus does not limit himself scrupulously to the mere observation of phenomena, but attempts, in accordance with his profession, to formulate some general rules. These general rules are based on the method of inference from similar to similar. The principles of science result from the association of phenomena and the extension of empirical method beyond the immediate experience. Thus, in the constant reproduction of the same series of phenomena the Empirical Sceptics find the means of foreseeing the return of an event, and establish an empirical equivalent for the principle of causation.

Here in germ are some of the basic issues of empiricism and a theory of signs. The positivistic emphasis indicates the recognition of the applicability of scientific method to the problems of philosophy. The emphasis on the epistemological problem as basic is another advance over previous schools. The recognition of an empirical theory and domain of meaning results in the critical consideration of hitherto unquestioned philosophical concepts, such as "substance," "causality," and "universality." The resulting relativistic perspective allows for the freeing of philosophy from the absolutistic and deterministic views which dominated Greek thought. With the Hellenistic period of disintegration of old systems and ideals appear for the first time a critical temper and a scientific approach to philosophic issues. Lastly, the interest in signs and signification results in a new approach to logic, epistemology, and science. As the consideration of signs and symbols is in the forefront of modern empiricism, it is interesting to note the prominence of a similar speculation in a period which is like the present in many other respects.

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